CHILDHOOD EDUCATION

MARCH, 1932

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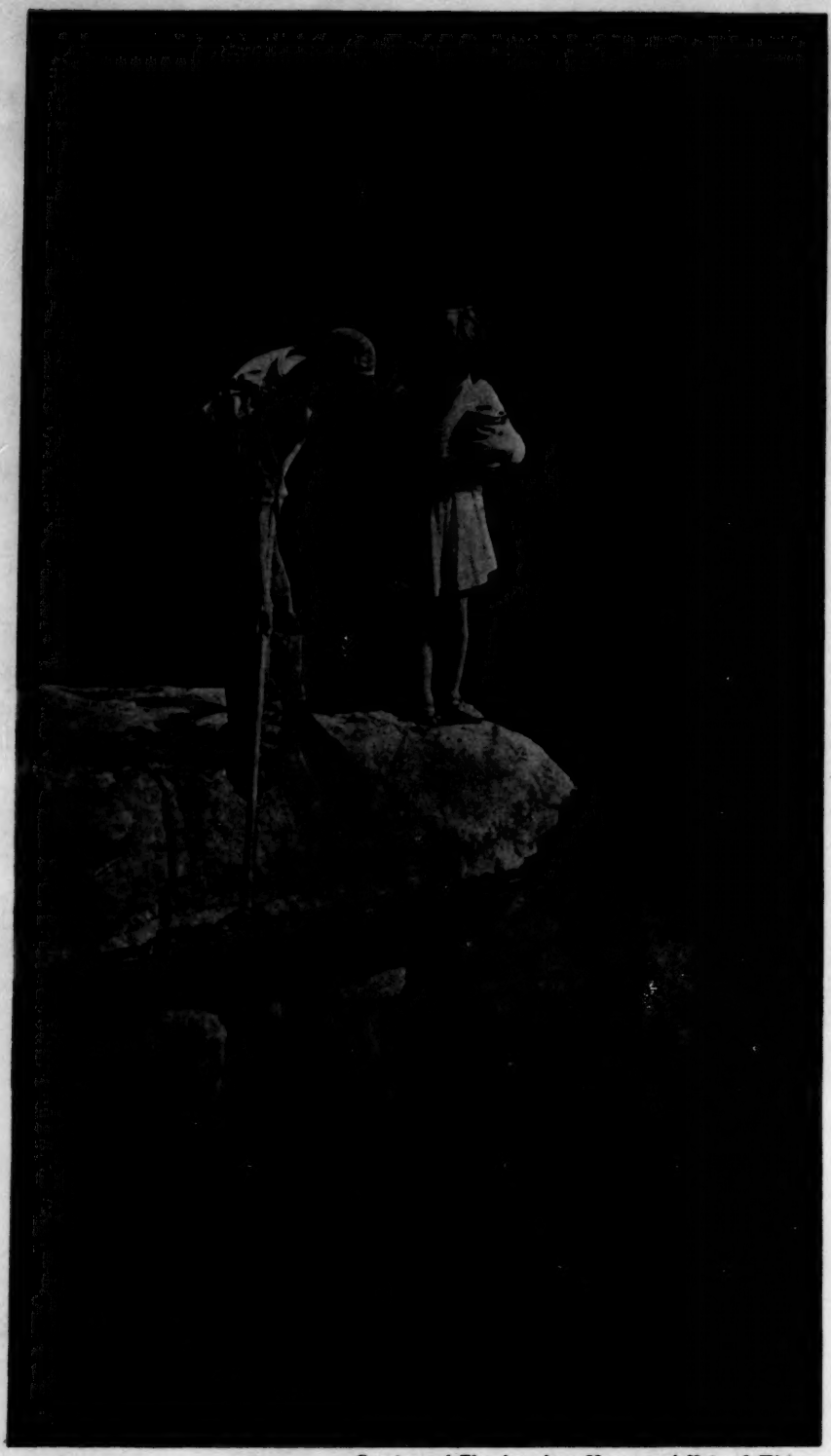

Courtesy of The American Museum of Natural History

POLLYWOGING!

CHILDHOOD EDUCATION

For the Advancement of Nursery—Kindergarten—Primary Education

Vol. VIII MARCH, 1932 No. 7

The Course In Nature Study

ELLIOT R. DOWNING

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A CAREFUL analysis of the courses of study in nature study in use in various cities and states shows that pupils in the grades in this subject are chiefly taught the names of common animals, plants, and physical objects, and learn something of their activities. The major purpose of such work seems to be, as expressed by many teachers, "to give an acquaintance with the environment." The next most frequently expressed objective in the literature of nature study is "to teach pupils to observe." Again we find very commonly expressed such objectives as "to impart a love for nature" or "to give children an appreciation of nature."

The very indefiniteness of such constantly recurring statements seems to indicate that many nature study teachers, possibly most of them, have no very clear-cut notions of what they are trying to accomplish in the subject and consequently only hazy ideas as to the desirable subject matter to be presented. Why should one become familiar with his environment unless it is to the end that he may better control that environment? The scientist never observes except as that is part of the process of reflective thinking used to solve some problem he is facing. To try to train children to observe apart from problem solving is totally unnatural.

The construction of the science curriculum, if it is to achieve maximum efficiency, cannot be done piecemeal. It must be formulated as a whole. Teachers of nature study, of general science, of biology, physics, and chemistry must work together in order to produce a real course of study in science—one that will have dependent continuity, the early work affording foundations on which the later science instruction is built.

The major goals of such a course must be: (1) to give such an understanding of and familiarity with the most important principles or laws of science as will insure the ability of the pupil to use them in solving the problems involving science that are bound to arise in his life; (2) to impart skill in scientific thinking and (3) to establish certain desirable ideals, desires, tastes, attitudes of mind that impel to vigorous action.

The teacher must evidently know what

are the laws most often needed in life situations, the elements and safeguards of scientific thinking and the most desirable emotionalized standards that science can aid in establishing. To list all these here would transcend the limits of this article, but most of them have been reasonably well determined by objective studies.[1]

Pupils in the grades can be given an understanding of some of the most important principles and much drill in applying such to the solution of problems like those that arise in life. Even little children think and may be trained to correct methods of thinking on concrete problems. Surely childhood is the time to begin the establishment of desirable ideals, desires, etc. The grade pupil can, for instance, apply the laws of simple machines, he can understand the principle of adaptation and apply it to his own life. He can be led to realize that the observations he makes as the basis for the solution of a problem he is facing must be accurate, extensive and made under a variety of conditions, else the conclusions he draws may be wrong. He can be given some understanding of what science has cost in human effort so he will have greater respect for it. He can understand the regularity or lawfulness of nature and be given a sense of his own moral obligation to live in accordance with Nature's laws.

Then too he may be given experiences which satisfy his curiosity for the time being and which also provide that background of information needed to understand principles he will encounter in his later science work. To fly a kite is to realize the force exerted by moving air, to adjust its bridle so it will fly low or high is to gain experience that will help him understand the principle of the resolution of forces. When in his garden he is shown how to cross pollinate his sweet pea plants he will obtain new flowers that seem very wonderful and will also be acquiring experiences that will help build up the apperceptive mass for an understanding of the laws of inheritance. I would not expect him to learn to recognize all the birds but only those I know will be important in the study of migration as one form of adaptation, a topic coming in some later grade. Some time perhaps I shall take him to the nearby quarry in order that he may hold in his hand the fossil trilobite and realize that he has in hand the remains of an animal that lived here 300,000,000 years ago. It will give a thrill that will tend to induce a feeling of wonder, awe, and reverence.

But now the selection and organization of the curriculum materials to accomplish the major goals and more specific objectives of science instruction must not be left to the haphazard and independent choice of the teachers of the several science subjects, else there will be endless duplications and serious omissions. Some wise executive officer must meet with his science teachers as a curriculum committee, to plan, with such expert counsel as can be obtained, the science curriculum as a whole.

What principles of physics, of chemistry, of biology will be put into the high school courses in these subjects, which ones will be allocated to general science and which to the elementary school? Which will be left for college? What are the experiences needed by pupils to acquaint them with the subordinate concepts needed as a background for understanding these principles, and at what level shall these be put into the curriculum? What are the important problematic situations of the sort that arise in life that can be used as practice material to give pupils facility in the selection and application of the needed principles?

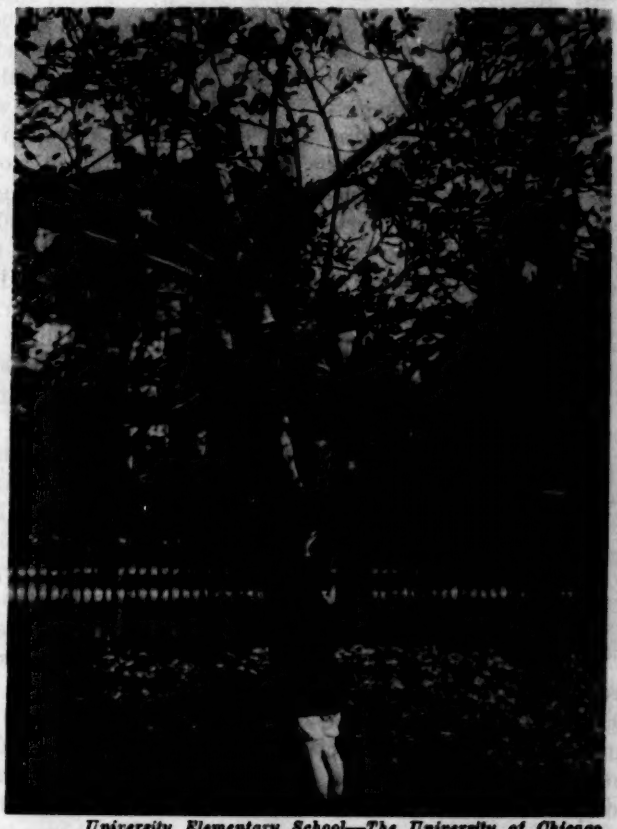
In a similar fashion the establishment of this, that, and the other ideal, desire, attitude of mind must be allocated to the several levels, as must also the development of skill in the use of the several elements and safeguards of scientific thinking. Then there must also be selected

[1]See forthcoming yearbook of the National Society for the Study of Education, 1933, on the Science Curriculum.

the best available text-book and collateral reading material, the best field trips and experiments to accomplish each of these several things.

That this is no easy task that is being outlined is realized. It cannot be done overnight. It may take months or years of work to do it thoroughly well. But it is the right road to follow. It is better to progress slowly along the right track than to be content with our present totally inadequate science course.

When this is accomplished each teacher will know what his or her definite task is and will see how it fits into the whole scheme. The supervisory officer will know whom he is to hold responsible for each item and the pupil will progress in a cumulative task that will develop in him abilities, skills, and motives rather than cram his head with a lot of factual material that is safer kept in any good encyclopedia.



University Elementary School—The University of Chicago

Climbing the Trees in Scammon Garden

Science Experiences In the Nursery School

AMY HOSTLER and GERTRUDE BICKNELL

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WHEN the second unit was added to the Western Reserve University Nursery Schools we took into consideration the vital interest that children have in all phases of science, elementary though it may be. In planning the staff for this group it was decided to choose one teacher who had a major in biology. This teacher[1] worked out a definite list of science activities for both Group I (2-3½ years) and Group II (3½-5 years) in our Nursery Schools. The program for the year was to be suggestive to the staff as a whole and was planned to give continuity to the work done in the two groups. The general aims in both groups were the same:

1. To give a continuous series of experiences in the various fields of nature. This will give the child the variety of sensory experiences that he needs at this age, for he will touch, taste, smell, listen to and look at everything.
2. To develop right attitudes of thoughtfulness, cleanliness, and humaneness.
3. To develop right attitudes toward sex through casual everyday experiences.
4. To give a genuine and continuous enjoyment of nature.

In making this plan the home background of the child enrolled had to be considered. About one-third of the group lived in the country during the summer, went to the country week-ends or were often taken to parks on simple picnics. All of this group had large yards at home with gardens, trees and flowers. Another third of the group lived in smaller houses, with smaller yards and only a few flowers. They went to the country too, but not as frequently, and then only for a few hours of a day. They went on many rides and had long walks with a parent or a maid. The last third of the group was housed in the usual type of city apartment with no usable yard space. These children spent most of the time outside the nursery school indoors. Considering this range of backgrounds, we knew that many experiences would be repetition for some children, but sharing these experiences with a group would be new. Many of the children would have no contact with growing things or with pets except through their school life. Every effort was made to meet the needs of each group and of each child as far as possible. Many possible experiences were listed according to the three seasons of the school year. When the child's interest was at its highest peak, the suitable experience was made possible. His interest was also the guide in determining the length of time given to any special topic. At the end of this paper are listed the experiences for the four-year-old group that our outline includes for September, October and November. This outline is only a memorandum of what may be undertaken. Some of the best leads come from the children themselves.

Mondays are treasure days when children, parents and teachers arrive with the findings of week-ends spent in far away spots. One day Jimmy came with a piece of dried honeycomb he and his father had found during their Sunday afternoon walk on the farm. A father arrived with his young son and while he waited to hear a report on the medical examination, the father said, "Bob wanted

[1]Miss Gertrude Bicknell.

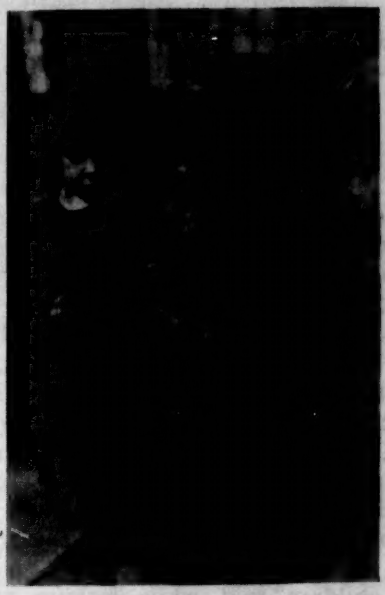
to bring something he found in the yard yesterday, but I persuaded him to wait a day till I can find out what the blame thing is. Looks like a worm but it has feelers like a snail. By the way, could I borrow that Comstock's *Nature Study* on your desk?"

The outline for the 2-3-year-old group has the same headings and the experiences overlap. Nevertheless, there are marked differences. For instance, the young child has a shorter interest span and his responses are less direct. The two-year-old starts to lift the chestnut burr and says, "Hurt, hurt," and goes away. The four-year-old says, "See how soft inside. They look like bunny's ears."

Pets play a prominent part in this science program. The very first pet, Kris Kringle, our canary, was brought by one of the children. Immediately we were asked "What does he eat? How does he eat?" This led to the daily care of the bird that is shared by all the group. If you come into the Nursery Schools any morning at 9:30, you'll probably find Lois in one corner scraping perches, another child filling food cups, and a third changing the paper on the floor of the cage. Recently we have had a new interest because Kris has been molting and two long tail feathers have been replaced by shorter ones and his wings are somewhat changed. Interest in Kris Kringle led to great interest in birds in our yard. This continued through the winter and well into spring. The children participated in hanging bird houses, making suet dainties to hang outside and making and hanging feeding trays.

One day a frog was introduced to the group. The children were keenly interested in watching the frog jump and swim. They dug for worms until the ground was frozen and took them in and put them in the frog aquarium. When the ground thawed out in the spring the children had not forgotten "Spotty," the frog, and again dug for worms with renewed interest. Some of the children would pick the frog out of the aquarium and were delighted with the cold slippery feeling of his skin. Throughout the winter "Spotty" grew to be a real pet. One sunny day the frog jumped away from one of the children and slipped through a hole in the sunporch and was never seen again. It was a long time before they ceased to speak of him.

Later two Porto Rican toads were brought to school and were immediately greeted with, "Oh, they look like great big frogs." Only a few of the children asked to touch the toads at first. Then one by one they all tried it. When the toads were put on the floor and started to hop, many of the children hopped in the same rhythm. They continued this a few minutes until one of the children, who had refused to do this before, gently touched the warty back. Then she put all her fingers on the toad's back and after the third attempt she picked it up. While she was holding it she said, "This looks like the frog we had last year." Another



Only a few of the children asked to touch the toads at first. Then, one by one, they all tried it.

child would say to the toad each time it stopped hopping, "Hop, toad, hop," and would tap his foot suggestively. When the toad did hop, very naturally the children thought he understood the direction. Every day the children asked to take the toads from their cage and let them hop around the playground. The children followed the toads around and when they semed to be hopping in the wrong direction, they picked them up and headed them in the other direction. The most interesting play came about when a few children imitating the toads formed a line and hopped about the yard. Before it ended almost the whole group had joined the play. Many pictures were painted that included these pets and many songs were sung to the group by individuals.

"Salamander, salamander. What a funny name! I never heard of that before," was the reply made by one of the children when first shown two Japanese salamanders. Many of the children wanted to pick them up and hold them, and some of the children let them crawl upon their arms. The children were delighted in feeding the salamanders because they always seemed hungry. When the wood newts were shown, a child said, "They look like little salamanders only they are orange instead of black."

At the beginning of the year the children put fish food in the aquarium for the goldfish and then stepped back and watched the fish eat. Now they have trained the fish to come to the top as soon as the food is dropped in. One of the children said while looking at the fish in the Japanese garden pool, "Oh, they are real live goldfish. I thought they would be celluloid." Another child said in reference to the Japanese garden, "I like that Japanese garden. I wish I could live there."

Woolly-bear caterpillars felt so soft to the children that they spent much time in holding them and letting them crawl on their hands. They also were interested in supplying leaves for food. Crickets were interesting because of their hard shells and chirping. The long legs and the quick jumps of the grasshoppers fascinated many children. The claws of the crayfish were also interesting, as well as the way he moved backward underneath the stones.

A pair of rabbits was given to the Nursery Schools. Not only the softness of the fur coats but the warmth of the bodies appealed to the children. They were also interested in the long ears and short tail. Feeding the rabbits is a privilege. One time the children cut off the green carrot tops for the rabbits, cut off the tops of the carrots proper to grow in water on the sun porch, and took the bottoms of the carrots to the kitchen to be used for their dinner. One child on her own initiative stuck a stick through the wire at the bunnies. When she found that they were eating the bark from the stick she said, "Oh, look, the bunnies like the bark so well they are almost pulling the stick out of my hand." Another child said, "The bunnies like something funny to eat, but they don't like to eat the stick, just the bark." Later when the young were born the children observed and carefully handled one of the new born. They watched the babies nurse, open their eyes, and grow fur coats.

Three turtles were brought to school by one of the children. It was great fun to watch the turtles stick their heads, tails and feet in or out, also to feel the hard shell, and to watch them snatch food. This story was told by one child: "I have a little turtle. In the morning I feed him meat and toast. I put him in the water and he flops around."

Bobbie, our lamb, was loved by all the children. Many times during the day Bobbie received most affectionate pats and often a hug. It was great sport to give him a bath in a metal tub or to feed him fresh green grass. One day several of the children went to a nearby lot and cut grass, put it in a basket and brought it back to Bobbie. Once when several pet

cages were being shifted Bobbie was taken to a new wire house. Two children got in the cage and pulled while two others from behind pushed Bobbie, who was becoming very heavy. At last the lamb was inside. When the teacher turned back from answering a question, she found four children inside the cage with the pet. When she asked why they were in there they said, "Bobbie looked lonesome by himself." Much to the children's delight, Bobbie was occasionally allowed to wander around the yard as they played. Of all our pets I am sure Bobbie was the favorite. He frequently "Baa'd" when the children addressed him, and followed them about whenever he was let out of his pen.

To the children's delight, Bobbie was occasionally allowed to wander around the yard as they played. He followed them about and frequently "Baa'd" when the children addressed him.

Our duck laid an egg every morning and, much to the joy of the children, took frequent baths. Our sitting hen was too nervous to stand the noise of a nursery so did not prove to be a dutiful mother. However, the children were very much pleased in putting eggs under her and in giving her food and water. In fact, they dug worms and gave them to her, holding one end of the worm through the wire until she took the other end. A hatching of baby chicks was brought to the Nursery Schools. For two months they were watched, fed, and played with. When the time came at the end of the school year to give these chickens to some one, no one could be found connected with the school who was willing to consider eating a single chicken. Finally the janitor took the pet of them all and planned to eat it on July 4th. Later he told a staff member that he gave it to a relative—he couldn't do it.

When one child visited the animal house during a trip to the Medical Building he saw Claudius, a new Chimpanzee. The child stared at the chimpanzee silently for a moment, then he exclaimed, "My goodness, who does he look like? I can't

tell." This might be a fundamental biological observation.

Garden experiences acquaint the child with the beginning of plant development and familiarize him with the completion of the growth cycle. In the autumn we became acquainted with the seeds—size, shape, color, kind, and distribution. At this time we planted such bulbs as the tulip, crocus, snowdrop, daffodil, etc. Each child had an opportunity to plant a bulb both indoors and out-of-doors. During the winter different children would say, "I planted a tulip bulb there," pointing to the tulip bed, "and next spring a flower will grow there." Or, "This is where we planted crocus bulbs. They are the first flowers to come out." One spring day a teacher was visiting us and a child dashed up and, propelling her by the hand, led her to a lilac bush. Pointing to a gorgeous tulip growing beneath the bush, she said, "That is a red tulip. I planted that bulb last fall." As the bulbs potted indoors began to grow the children would name the parts that appeared, such as leaves, stem, and flower. This interest in bulbs and in the final perfection of the flowers carried over for many months in conversation. The first day that Bobbie, the lamb, came out of his pen he walked straight over to the tulip bed and ate a tulip. There was great consternation among the young gardeners. "Why did he eat our flower?" "He's a bad lamb." It was difficult to explain the lamb's attitude toward plants and to reestablish him in favor. Even a day later the children were reassuring themselves with, "Bobbie doesn't understand about bulbs. He eats flowers. He does understand now, maybe."

Interest in growing plants and the final perfection of flowers carried over for many months in conversation.

One day this autumn a child brought a collection of fall nuts to show. The feeling of the outside of the chestnut burr occasioned various comments—"It pricks." "It's hard and sticky."

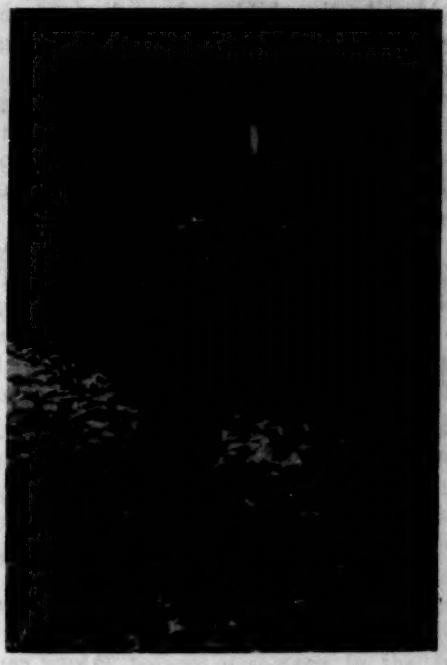
Upon being served applesauce one noon for dinner, a child said, "My mother bought a whole basket of applesauce." When informed that applesauce was made by cutting up apples and cooking them he said, "I guess my mother bought a basket of apples then and made applesauce." The next time that applesauce was to be served as dessert, the children were taken to the kitchen to watch the process. The same child who had brought the piece of dried honeycomb, several months later said, "Honey sandwiches, I wonder if this honey came from a beehive or a tree. It tastes to me as though it came from a tree."

Shelling peas, breaking up beans, washing potatoes for baking — the children have great fun doing these things to help Thelma, the cook. No child is required to do it, but the evident enjoyment of those who do—children, staff and kitchen help —proves incentive enough to all the others.

Some phases of sex education have been introduced naturally and the children have been as casual in accepting the in-

formation given at various times as the teacher has been in answering the questions. "Where did so many new snails come from?" The birth of snails became a frequent and expected event. That baby snails were born alive brought a new train of ideas. "Why are baby chickens in an egg?" "Why aren't baby bunnies in eggs?" A very considerate cat came to our school on the eve of the arrival of her family. We didn't see her until the next day when Virginia discovered her in a basement window, two feet below the yard level, protected by an iron grating. There was great excitement at the shout, "Come here, a cat is laying some kittens in our window." We opened the window so the cat could go in and out the basement door and yet the children could watch the new-born kittens with ease and not disturb them. The birth was accepted in the most casual manner. The whole thing was taken as a matter of course. Interest centered in the kittens. The baby rabbits arrived at about the same time and we could compare the development. We saw the rabbit mother stamp about her pen and we took the babies from her for two hours. That meant they had to be kept warm, and so in a box they were placed on a radiator and carefully guarded. When the babies went back to their mother, she was busy pulling fur from her stomach to line the nest of excelsior that she had molded with her feet. When a human baby arrived in one of the nursery school homes, the group was interested in the whole story again and wanted to know why Joan's mother was at the hospital. "She's resting," said the three-year-old Joan. "She's tired now 'cause she carried my baby so long and she was heavy." After thinking over the whole subject of birth, one boy said, "People have babies and animals have babies, but everything with feathers lays eggs." And after a minute, as an after thought, he added, "Everything but Indian hats." (He had just acquired a new Indian costume and was probably reminded of its feathered headdress.)

For the nursery school child it is difficult to list the general outcomes of this work. One day Jack may not care to become one of the group that is playing with toads. Perhaps the next day he is the only child who does play with them. Definite requirements of groups or of certain children are not considered in this plan. We want the child to be interested to the degree of participating of his own accord. Until that is true there is no urging. It is interesting, however, to see the proportional increase in the size of the group in the four-year-old group as compared with the two-year-olds. A



His first snow experience.

new pet was taken into the playground of Group I. Twelve children gathered around it for about two minutes. Five departed and did not return. Seven remained for one more minute and all but two left. These two stayed beside the pet for ten and twelve minutes. The others returned

at frequent intervals for just a look. The same pet presented to the four-year-old group brought nineteen children together, only seven of whom left before the questions stopped coming. And every child had a turn holding the pet before he left. It would be more accurate from home and school records to try and determine the individual responses.

We feel that the contribution of this work to the language development of our children is important. This is true not alone in vocabulary, but the content of these nature experiences gives the child an urge to express. We find that children who have never talked easily have improved when they have had these common experiences to discuss.

Already the children have learned that there are books that help identify nature materials. Several wild flowers brought in by children were identified with the help of a book. Now they see this book on a teacher's desk and they say, "That book tells you about the names of flowers and shows you how they look."

There have been several cases of fear of pets. These have disappeared. The other day one child took his mother out to see the Porto Rican toads, which are about four times as big as our toads. He lifted one out without any hesitation, and put it near her foot. Immediately the toad hopped. The mother started, gave a little cry and jumped away. John looked up surprised, "That won't hurt you, Mother. That's our toad. He has to hop to go." Mother, a city-bred girl, had had no such experiences.

We have had no formal excursions for these children off the campus. All these experiences were possible in a natural way at the school. We have broiled bacon on sticks over a bonfire, dug deep holes, picked quinces and raked leaves; we have frozen small ponds for skating, helped pile snow on a toboggan slide and shoveled walks; we have dug gardens, put in fertilizer and planted. We have learned to know rabbits, fish, turtles, frogs, toads, newts, salamanders, birds, doves, mice, dogs, cats, monkeys, lambs and chickens. We have learned what these pets eat and how to feed them, where they live and how to house them, and in some cases how to make their houses. We have not felt that we were bringing foreign material to the Nursery School group, but rather that through these direct contacts and everyday experiences our city children have been given a richer environment and a more normal background for understanding life and building a genuine enjoyment of nature.

The Fir Tree

There was a little fir tree
Standing all alone.
Along came a fairy
And touched him on a cone.
"Come," said the fairy
"Be a Christmas tree
All the children want you
How happy they will be."

Betty Lou, Age 7.

University of Chicago Elementary School

Earth Science

BERTHA STEVENS
Classroom Teacher, Avery Coonley School, Downer's Grove, Illinois

IF you were to show a child your watch —a child seven or eight years old— perhaps he would first be interested in the fact that it is gold, and he would notice the chased design on its back. Then he might turn his thought to what your watch really is. It is infinitely more consequential to him than his toy watch, for it does that thing to be expected of watches—it functions in keeping time. If he knows how to tell time he will enjoy exercising his power to do this, perhaps telling you to the minute or second what time it is just now. He persuades you to open the case; he would like to twist and turn or slide every movable part until he has learned all the departments of its functioning. Also, he may ask you to let him listen to its tick. All this is general experience; it may be summed up in his mind that a watch is a wonderful thing; that it is made in a certain way to have a certain way of functioning, whereby are produced dependable and orderly results. Any question of his that you can answer or anything you can point out to him regarding how and why a watch works will, in this stage of his interest, intrigue him very much.

Suppose on the other hand you were to try in the beginning to interest him in your watch's inner parts, separated from each other and from the case or any other part that would reveal to him what the wheels and pegs belong to. Suppose you omitted any reference to the total purpose or result of the combined action but tried to have him see the form, size and specific work of each isolated part or of two parts in their relation to each other. The bright little cogged wheels fascinate him temporarily, but he finds unrelated facts difficult to understand or remember. His eyes have seen something but his mind has gripped almost nothing. There are some children without doubt, of special bent, who might respond to this experience of mechanics; and it is entirely possible that the questioning and expressed interest of such children could be thorough and intelligent enough to at least bring out the fact that they are looking at the machinery of the unified object we know as a watch. The former of those two experiences has I believe, a universal rather than a special appeal, as in the case of the second; and it has throughout great values which the second experience reaches only in the end, if it reaches them at all. I have used these illustrations in the attempt to show why I believe in emphasizing the quality of wholeness in earth science presentation.

This is an emphasis which I have not found to be common in curriculum plans for science and nature study in the work of the primary grades. Yet, it has been, quite commonly, the purpose of work in this field to help a child to relate himself consciously to the world he lives in; to help him grow in range of interests, in habits of observation, in ability to think, in zest for the truth; and to develop in him some realization of the order, beauty, and variety of the natural manifestations with which life in the world surrounds him. I believe these ends can be served most successfully when some conception of the scheme of the whole is in the background of a child's mind. Ideas along with the facts, though never ahead of them, are I believe necessary to the full exercise of a child's thought and to the clearness and reasonableness which his thinking demands. He needs a background of organization into which the accumulating detail of his experience can fit.

Conceiving the earth in its wholeness involves the concept of the earth as a

ball. Conceiving the earth as a ball necessitates the concept of a world in space; for the ball must be somewhere. The concept of a world in space leads to the consideration of other bodies in space and our earth's relation to them. Thus, with the world concept, a cosmic concept is bound to be reached; but it has been sensed in any child's experience without reference to any procedure such as this paragraph outlines. He has looked and wondered at the stars; he has enjoyed the glories of sunrise, sunset and rainbow; and he has seen day by day the apparent journeys of sun and moon.

Presenting the earth as a whole can be accomplished in four main subject divisions: the earth in space, the inside of the earth, the earth's surface, and its atmosphere.[1] In its character of unity the earth should be kept undivided by pedagogical claims of physical geography, social geography, elementary science and nature study—although these fields of thought are all needed to make the subject clear. The earth ball as already stated must be seen in its relation to other bodies in space, and in its aspects of lithosphere, hydrosphere and atmosphere. Moreover, to recognize the progress the earth has made in its span of cosmic history, account must be taken of its vegetation, its animal life, and its crowning factor, man.

Children's play with stones, in the study of the inside of the earth, might be taken as one illustration of the way in which concrete experience gains in meaning and interest because of the associations which working in this large way makes possible. At the time they enter upon this stones experience, according to the plan I have followed, they have already learned of science's theory of an incandescent earth mass which congealed into rock; they have pooled their own proved information of the present make-up of the earth's interior with that which scientists offer; they know something of the action of earthquake and volcano; and they have followed by means of observation and acquired information the travels of the underground water, and have become acquainted with the idea of its solution and deposition of mineral matter.

It is a good introduction to the world of stones to leap into an experience of crystals some free, propitious day without warning. Thus children have the joy of surprise when they first behold these mineral flowers of rare beauty in form and color and play of light. An assemblage of small, colored, single crystals and small clusters, displayed on white or light neutral paper, has been shown them. Small pieces are best because they play into each other's coloring as larger ones do not and they permit a variety of forms to be seen together. Thus enjoyment is increased, comparison is stimulated and discovery of facts is promoted.

Clear, colorless little columns of gypsum radiating in every direction from a common center, crystals of purple amethyst in flat cluster, rose pink rhodochrocite, silvery interlocked cubes of galena, blue-green amazonstone, soft yellow sulphur, a dark garnet so many sided as to seem rounded, coral colored needles of crocoite, transparent obelisks and pyramids of quartz shooting in varying sizes from a common base, darkest blue azurite, a column of translucent tourmaline with its deeper pink paling and merging into delicate green—these and many others with equal claims are worthy of a child's first viewing. The beauty of them, spread out together, is enough to make anyone exclaim or be silent according to his nature. Crystals like these, as well as other attractive small mineral pieces, can be obtained easily at slight expense. Those sent from the Ward Natural Science Establishment in Rochester come with information as to their identity and regional source.

Here in the field of crystals, if anywhere, can the precept "go slowly" be heeded wisely. For several days children may merely reveal in this new found de-

[1] This is discussed in detail in *Child and Universe* by the writer. John Day Co., 1931.

light, arranging and re-arranging the stones to bring out new color satisfactions, or building with them the walls and castles of a fairyland. Whatever play they engage in with crystals, interest in form is bound to be aroused. They come to know unmistakably the variations and the range of forms which their collection exhibits. They find for example that specific form characteristics are found in all the quartz crystals, of whatever size or color. They begin perhaps to count crystal faces, to liken crystals to other geometrical shapes already known to them, and to compare the forms of the crystals of different minerals. They may discover that the single crystals of a cluster vary in completeness, size and coloring but that they do not vary in basic shape or the number of their faces.

In order to understand crystals at all children must be taught that the internal structure corresponds to the external form. Until this fact is apprehended the full wonderfulness of a crystal cannot be realized; apart from this fact the crystal could have no more interest than a cut or molded shape. John Ruskin has invented a way for imparting this knowledge to children by means of an active game.[1] Making crystals, perhaps of salt, alum, sugar, is a further aid to the children's understanding.[2] Such experiments, of course, cannot explain what the process of crystallization is; but they afford visible proof that crystallization does take place.

When children have spent an adequate amount of time in experiencing crystals, and also jewels, they are ready for what usually constitutes a further surprise—the generally unheralded beauty of other minerals, some of them crystalline but not in recognizable form. Stones which can be displayed to good purpose are small pieces of rose quartz, azurite and malachite in combination and in concentric waves of sky blue and spring green, yellow carnotite, henna colored hematite, pale pink or white satin spar, keenest blue-green chryso-colla, gray labradorite with its purple and blue diffraction, moss agate with its fernlike tracery in a ground of milky whiteness. Making paintings of groups of stones, especially if water colors be used, can provide a means for promoting acquaintance with them, and continued enjoyment of them. Not only do children represent the color and form, but they give expression to subtle appreciation of textures and of effects produced by light whether iridescence, luminousness, shine, transparency or translucence.

There is another possible surprise in the revelations which tripod magnifiers produce. Azurite and malachite show small nodules unguessed before. A merely rough surface of iron pyrite becomes well defined in cubes. A small seemingly undifferentiated disk of pale green wavellite turns into a well-organized flower-like structure, the tiny crystal needles looking like slim petals attached to a center. The fern seen in the moss agate grows in clearness and delicacy. Then, another discovery. If the fine dust-like particles—that fall from the stones as a result of contact with each other or of being handled—be gathered together under the magnifier they look like little jewels, gay, sparkling and beautiful. Again, if the larger, rougher stones be looked at through the magnifier, the azurite, malachite, hematite, granite and sandstone, loosely piled, the beholder is transported into a region of wildness and natural grandeur; of rough gorgeousness of color combined with green mossy softness. He looks across vast, rugged, glory-colored canyons, down jagged mountain steeps, through crevasses of piled up bowlders, or into deep cool caverns that might be under the sea.

In their play with stones children more or less unconsciously learn something of composition, structure, texture, fracture, and of other types of cleavage; of striation, and of surface effects that wind and water have produced; of relative weight,

[1] *Ethics of the Dust.* Wiley & Sons, p. 53.
[2] L. J. Spencer: *The World's Minerals.* Stokes Co. P. 7.

hardness, frangibility, and transmission of light.

This interest in stones reaches out to include those the neighborhood affords. The children may stagger into the schoolroom with great pieces of rock of unbelievable weight; and they fill window-sills and all other available spaces with a multitude of stones of seeming similarity but known to each finder for some special feature of beauty or geologic meaning. The beauty of coloring which they may point out in a little slab of shale or ash or a chunk of sandstone is really there; it needs only eyes that see to bring it out. The fascination of breaking stones open in the hope of discovering that one has a geode or fossil or merely to enjoy the intensified color of the inside, of separating scale after scale of mica, of tapping slate to see it break into leaves in endless repetition in accordance with the physical law that governs it, of striking sparks by the impact of stone, or of using the scratch test to determine relative hardness, is worth even grown up absorption.

Following this experience can come information of ore veins, pockets, outcrop, and of mines and quarries. With sufficient knowledge as background a local mine, a quarry, a gravel pit, tunnel-digging or other excavating, becomes a mecca of unfolding rewards. Playing at being miners may become for a time a favorite occupation. Collecting the rounded and ripple-marked pebbles of lake shore or sea shore has its fascinations also. Through such intimate contact and observation children can become ready to hear of the great classifications of rocks and stones on the basis of origin—igneous, sedimentary, metamorphic, to learn their characteristics in so far as these are easily discernible, and to hunt illustrations of them in the local countryside.

It is worth while to remember that the different localities in which children of various groups live offer different natural resources; what is common in one place is not found at all in another. It is possible to build up an interesting system of exchange between children or groups of children who are physically separated. Regional information of minerals can be extended by the making of hemisphere maps showing regionally, for the whole earth, its principal mineral resources.

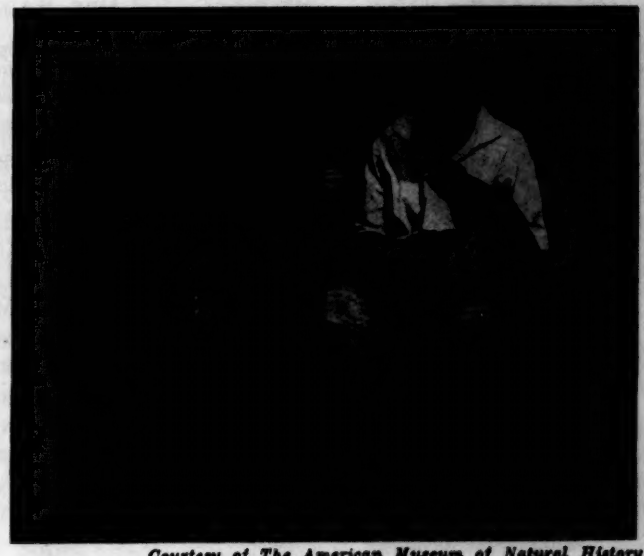
In subsequent study of the earth's surface and its atmosphere this stones experience is useful in helping children to realize the cyclic process of the making and wearing of surface rock and the parts which are played by water, wind and weather; the erosive and depositing work of rivers; the origin of soil and of sand.

In nature, cycles and other sequences abound. These not only interest children and suit their way of grasping facts, but they can serve to bring out awareness of physical forces acting throughout the whole earth; also of interrelations, conservation, and the universally rhythmic aspect of natural physical action. "The rain falls, the springs are fed; the streams are filled and flow to the sea; the mist rises from the deep and clouds are formed which break again on the mountainside." The rock, already referred to, is worn, broken, transported, deposited, re-formed and subjected again to the weathering processes that wear it and carry it away. The wind "goeth toward the south, and turneth about unto the north; it whirleth about continually, and the wind returneth again according to his circuits." A burning stick does not go out of existence; rather, it passes through changes whereby water vapor, carbon dioxide, and ashes are produced in its place. The water vapor falls with the rain, the ashes add themselves to the soil, and the carbon dioxide may be absorbed as food by vegetation. A flower blooms, seeds are formed. The seeds mature and fall to the ground; they germinate and sprout and, in the end, a flower blooms once more. Other illustrations are found in the cycles of day and night and the apparent march of sun, moon and constellations, of the moon's phases, the re-

turn of the tides, and the earth's seasons. Walt Whitman has said, "All is a procession; the universe is a procession with measured and beautiful motion."

In work with children the sequential movements of nature—as we sometimes say, its pageants—lend themselves to dramatic representation through the medium of pantomimic rhythmic plays, danced rather than acted. I believe that much beauty, as well as truth, can be illustrated by this means.

A plan to promote wholeness of concept regarding the earth must take account of its order, rhythm, beauty, and its possibilities for endless unfoldment to individual understanding. It should provide experiences which might warrant these words of a little girl, written at the age of eight: "The world is oh, so beautiful. The world is overflowing with wonderful things and interesting things. So many things you can't think it. No matter how much you studied you would never know all that you could know."



Courtesy of The American Museum of Natural History

Jim, the crow, earnestly discussed the food question, for he was always excited about a meal in the offing and would make friends with any who issued an invitation to dinner.

Experiences In Nature Study Used As the Basis for Other School Activities

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THE teaching of Nature on the first grade age level is based primarily upon the constant exposure of children to their immediate environment. The values derived from this constant exposure to nature all about us are dependent upon the interests of the children, the richness of the school environment, the frequency of the activities undertaken, the tying up of their nature activities with the other school activities, and the re-enforcement of these activities by an adult.

Through attempting to answer the question, "What makes that noise?" we build an understanding for a later explanation of "How does it make that noise?" Too much reasoning cannot be expected on this age level. To attempt to explain beyond children's ability to reason checks their enthusiasm for finding out. A definite framework is desirable in planning possible science experiences. This calls for an investigation of the availability of the necessary materials should an activity be undertaken. The possible learnings to be derived from a given unit are evaluated. Unforseen contributions are not disregarded but are utilized in a worthwhile way.

The science units recorded here were executed in the first grade of the Western State Teachers College Training School. No attempt has been made to evaluate the learnings derived from the undertaking of the units. On recording the growth of these units it is clearly shown that a science experience can so easily form the core of a teaching experience, thereby uniting the reading and language experiences, the art experiences, the number experiences, the music experiences, and the health experiences into an integrated unit of work.

Some of our Autumn Experiences

During the early days of autumn we took walks to see how many different colors we could find in the leaves and to notice how some trees were still all green while other trees were all yellow and some others were red or brown.

When we returned to our room after our first walk the children wanted to talk about their walk and this is the story that they told:

Our Walk

We went for a walk.
We gathered some maple leaves.
Some leaves were red.
Some leaves were yellow.

In the discussion which followed the walk, one child asked why the leaves fell off. It was explained that the tree had made all of the food that it needed until next spring. As the leaves are the food factories, the tree does not need the leaves until spring, so the leaves fall off. This explanation brought forth many discussions of how other plants, insects, and animals, including man, prepared for winter. The following are some of the topics discussed and the activities carried forward:

Topic

1. The storage of food in nuts.
2. The preservation of food.
3. The storage of food by animals.
4. The preparation made by insects.
5. The protection of plant life.

Activity

1. Gathering of walnuts, hickory nuts, and chestnuts to be fed to the squirrels and birds when the ground was covered with snow.

2. Making of apple jelly.
3. Watching a squirrel carrying nuts to his hiding place.
4. Watching the caterpillar spin cocoons. (The caterpillars were brought to school by the children.)
5. Placing leaves over the bed of daffodil bulbs.

During the first day of the autumn term the four children who had come to summer school were asked to tell the other children about our garden. (Two children who lived near the school had cared for the garden during our vacation.) Then we looked at the bulletin board. There was a picture of a flower garden. Under the picture were two sentences:

We are going to the garden
What shall we see?

Our trip was recorded in this way:

Our Flower Garden

We went to the garden
We went this autumn.
We have zinnias.
We have asters.
We have marigolds.
We have cosmos.
We picked some flowers for Mr.—.

One child was asked each day to gather a fresh bouquet for our room. About two weeks later we were asked to arrange a bouquet for the flower show. We were happy to be able to go to our own garden to gather our flowers. We learned to gather the flowers with long stems. We learned to put some green leaves among the blossoms of our bouquet. It was fun to choose a suitable vase in which to arrange our bouquet.

Each autumn the entire school has a flower show. Each room arranges the prettiest bouquet they can make from wild flowers or garden flowers. The art teacher talks to each room about flower arrangement and color combinations.

The bouquets are taken to the assembly room and arranged on the stage where they are judged by a committee from the faculty selected by the children.

The Flower Show

We picked some flowers.
We put the flowers in a vase.
We will show our bouquet.

The Flower Show

We took our bouquet to the flower show.
We won second prize.
We won a red ribbon.

We learned that some caterpillars do not spin cocoons in the autumn but that they hunt a nice warm hiding place in which to spend the winter. We had some woolly bears in our vivarium. We took the vivarium out among the trees and opened the door. We are watching the woolly bears hurrying to find some safe winter homes.

Frost and What It Does to Plants

One morning late in October following a crisp frost, a little girl came back from our garden without any flowers. A visitor

It is a tumble-weed race. We found some tumble-weeds. We kept the tumble-weeds until there was a nice windy day. Then we took them out to see how fast the wind could make them roll.

had come in the night. Later in the day all of us went to see what had happened. This is what had happened:

Our Walk

We went to the garden.
The flowers were not red.
The flowers were not yellow.
Jack Frost came last night.
He made the flowers brown.

We talked about what frost did to plants and how the plants were different this morning from yesterday morning when we had visited our garden. We learned that frost comes when it grows very cold during the night. We remember that we had to have another cover on our bed last night. Because it was so cold in the night the frost came. We took some frosted leaves from our plants back to the school room and all of the icy frost changed to water. Now we know what frost is. It is just frozen water.

We Learned About Seeds

The Seeds

We went to the garden.
We gathered some seeds.
We gathered some zinnia seeds.
We gathered some aster seeds.
We gathered some marigold seeds.
We gathered some cosmos seeds.

These seeds were brought in the room and spread out on a paper to dry. Jars with tight-fitting tops were brought from home. Labels were made and pasted on the jars.

The Seeds.

We dried the seeds.
We put the seeds into jars.
We shall plant the seeds next spring.

At noontime a little boy came into the room with some burdock seeds sticking to his trousers. He became very excited when he was reminded that the seeds were stealing a ride on him. The burdock seeds were also placed on the science table. This is the sign that we made for the burdock seeds, "Can you guess on whom these seeds stole a ride?" During our discussions on why and how seeds find a place to grow, many different kinds of seeds, including fruits and vegetables, were brought to our room. They were classified under these headings:

Seeds that float.
Seeds that sail.
Seeds that steal a ride.
Seeds that pay for their rides.
Seeds that people eat.[1]
Seeds that tumble.

Our Assembly Program

These experiences during September and October, gathering and talking about our different kinds of seeds and talking

[1]Patch, Edith M. *First Lessons in Nature Study.* Chicago: The Macmillan Company, 1926. Pp. 49-63.

about what autumn is, formed the background for the development of our assembly program. This story represents the results of the children's ideas from many talks about seeds and Hallowe'en. The play was divided into two parts. The first part was realistic. It showed the boys and girls gathering nuts, apples, pumpkins, squash, and corn to be stored for winter use. The second part was imaginative. The brownies and elves were enjoying a night of festivities. The children made jack-o-lanterns and painted the trees for our stage scenery. They painted long strips of brown paper for the trunks of the trees and then with thumb tacks they fastened the strips on to pieces of board as is shown in the photograph. They also painted in autumn colors the forms for the tops of the trees and nailed them in place.

Act I

SCENE: Near the woods.

TIME: An autumn day.

Boys and girls, wearing wraps and carrying baskets enter the woods in small groups. They are gathering nuts. A few go into the cornfield to gather some ears of corn and some pumpkins.

The children who are dressed as gray and brown squirrels hop around carrying nuts in their cheeks to their nests. A gray squirrel buries some nuts by digging a hole in the ground. Another squirrel sits upright and eats a nut.

Our Hallowe'en Play

Characters:

Boys and Girls	Brownies
Squirrels	Witch
Owl	Cat
Moon	Bats

Stage Properties:

Trees in autumnal colors.
Corn stalks.
Nuts, pumpkins, squash, pears, and apples.

Act II.

SCENE: Same

TIME: Near Midnight. (Mellow lights).

The moon, represented by a child holding a large circle of paper which he had painted yellow makes it rise slowly at the back of the stage. The owl hoots twelve times for twelve o'clock. Quickly the brownies assemble in the woods. The

George is making a tree for the scenery of our Hallowe'en Assembly Program. The children painted long strips of brown paper for the trunks of the trees. Then with thumb tacks they fastened the strips on to pieces of board.

brownies are carrying jack-o-lanterns which they place in appropriate places. The brownies busy themselves here and there. They seem to be getting ready for a party. As they skip around they take

hold of each other's hands and begin singing:

Little brownies skip at night.
When the moon is shining bright.
But when sunshine brings the day
Little brownies hide away.[1]

During the singing and skipping the old witch, carrying a basket, enters riding on her broom. She is followed by her black cat who arches his back. They fall asleep.

Just as the brownies are finishing their dance, one brownie notices the old witch and her cat. He motions to the others to look. They are startled. One brownie who does not seem afraid tips very softly over to the witch. Very much to his surprise, she opens her eyes. The brownie draws back. The old witch beckons to them. Very slowly the brownies come nearer. She offers them something to eat out of her basket. They look doubtfully at each other. Then the old witch begins eating and insists that they join her. The first brownie takes a bite, looks pleased, and insists that the others accept the offer which they do. They are so pleased that they join hands and skip joyfully around the witch.

The old owl hoots three times for three o'clock. The brownies stop skipping, look at each other and quickly and quietly hide themselves away.

The old witch and her black cat fall asleep.

Some bats fly past.

Curtain.

Michigan Harvest

The first grade children were asked to participate in the school assembly called "Michigan Harvest." Since each room was responsible for arranging an exhibit, we chose to bring pears for our exhibit. After considering many ways of presenting our basket, we decided to write a riddle about a pear. Carolly was asked to read this riddle which we printed on a large sheet of oak tag:

"I am yellow.
I am juicy.
I am good to eat.
What am I?"

We did not show our basket until someone in the audience had guessed the answer.

Making Apple Jelly.

The arranging of this exhibit for the assembly, led into several problems. What shall we do with the pears. Robert had noticed that one pear was beginning to rot. Several children had brought apples instead of pears for this exhibit and a decision had to be made about what to do with them. Someone suggested that we eat the apples. But after counting the children and the apples, we found that we did not have half as many apples as children.

The question, what is mother doing with apples at home, suggested the idea of making apple jelly. Louis said that we should bring some more apples. A committee was chosen to find a recipe and to bring the necessary cooking utensils and ingredients from home, including jars and paraffine. The following record of making apple jelly was placed in the First Grade Recipe Book:

Apple Jelly

We washed the apples.
We cut the apples into small pieces.
We cooked the apples until they were soft.
We strained the apples.
We put the sugar in the juice.
We cooked the juice.
We washed the glasses.
We put the jelly in the glasses.
We covered the jelly with paraffine.

[1] *Universal Music Series, Primer.* Chicago: Hinds, Hayden and Eldredge Company.

The Common Garden Variety of Toad Comes to School

WILLIAM GOULD VINAL

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JUST what injunction gave the toad proverbial ugliness is uncertain. It is certain, however, that such toad epithets as homely, ugly, or disgusting exist as adult notions and not in the mind of the child. It is equally evident that such an unjust attitude can be implanted at an early age. That is why some grown ups are burdened with these false prejudices. It would be just as easy and a great deal more fun to discover that the toad's eye is a "jewel" or to think with Celia Thaxter that its notes provide a "lovely liquid-sweet song".

A generation ago a small boy by the name of Bill read Celia Thaxter's description of sending for a box of toads which were to rescue her Isle of Shoal's garden from greedy slugs. On the way to school that day Bill caught a toad and put it in his pocket thinking that he would try the same experiment in his lettuce patch. Now it so happened that when the arithmetic class was "out front", the toad, in response to the warm, comfortable pocket, began to sing. In those days bringing a toad to school was akin to Mary and her lamb. The teacher put him out. "Spare the rod and spoil the child" was another bit of pedagogy that had to be firmly executed. That teacher was conscientious to the letter of the law but her understanding of toads and boys was nil.

George, unabashed by Bill's experience, inopportunely asked how it was that a toad could find a pond in which to lay eggs. He was told something to the effect that "little children should be seen and not heard". In order to drive such fast and loose thoughts out of George's mind this conscientious but not understanding teacher borrowed Mr. Aesop's story about the Toad and the Ox. She told the fable for the sake of impressing the other children with a moral truth. She sent Bill home to have his pocket washed with strong soap but she had little hope of saving George.

The art of teaching has advanced a long way since Bill brought that toad to school. Attitudes, tastes, ideals and behavior have remained about the same for the average run of boys. That which was true about toads then is not new today. In the old school the teacher was busy teaching the three R's instead of teaching boys and girls. The most encouraging thing in the new school is that the teacher is trying to understand child life and that she has a deeper craving for a philosophy and a method to meet the child.

It is possible for a conscientious teacher to make mistakes today. The other morning a grade teacher borrowed one of my toads. In thirty-three minutes the toad was back. She had taught the lesson. I did not witness the procedure but can imagine that facts about the toad were the centre of departure.

There is more to the toad than his eye, his hind leg, and his partially webbed toes. Teachers often get the notion that "external dissection" is the sole aim of having a toad at school. They have so much subject matter to put across in an alloted time that they quite overlook the fact that the child's interest is in the living toad. To the uninformed teacher the hind leg is a definite fact and what the toad may do is an uncertain quantity. The "wholeness" is easily omitted yet it is the whole toad that appeals to the child.

The next time the common garden variety of toad comes to school let us keep in mind that it is the *child with his toad* rather than the toad that is the hub of

activities. A child is a budding scientist. Both child and scientist want to explore and to discover. Both approach with open-mindedness. Both need to select and compare. Both need to read and test. The child at play is carrying out serious work. The scientist at work is like a child at play. Both get interestingly absorbed in their efforts. The purpose of this article is to show:

(1) That we can no longer afford to belittle children.

(2) That the teachers in the lower grades need a thorough "grounding" in science that the growing concepts, habits and attitudes of children be sound.

(3) That the child and the scientist use a common thread of procedure in the scientific method of thinking.

1. *The Occasion:*

One day Meriel, aged ten, brought stones in her wagon for the school rock-garden. Incidentally she brought one of her toads in a glass jar. The children crowded around the wagon and asked many questions. This is Meriel's story as she wrote it for me.

"I caught my toads beside a pond. They were no bigger than my little finger nail when I caught them. I kept them in a big wooden box about a yard long, sixteen inches wide and about twenty-two inches high. I kept the box outside. I had the top of the box open so they could catch flies and insects. In the box I had dirt and grass growing and in one corner I had a pond. For the pond I had a pan sunk in the dirt. After I had them awhile they were full grown toads."

2. *The Excursion:*

The children suggested an excursion. After a lively discussion the place, time, and equipment were decided upon.

Pollywoging! A-frogging! Capturing a self-complacent old toad. Perhaps there is nothing more fascinating. It furnishes adventure and has a touch of the mysterious. Armed with screw-topped jars the class set out on a hunting expedition. The home of the game is near pools, in the moist shade of deep woods, and perhaps the edge of a garden.

3. *Organization of Material:*

Along the window ledge is a line of fruit jars, some with water and others with damp moss on the bottom, ready to receive different kinds and stages of frogs, toads, and salamanders. The "swimmers" are sorted and placed in the water jars and the "air-breathers" are given mossy compartments. The tadpoles are arranged in stages: no legs, hind legs, four legs, and tail nearly gone. The frogs are kept in the jars by cheese cloth held over the openings by elastic bands. The toad is placed in a large bowl with damp earth.

4. *Naming of Collection:*

Each procedure is an outgrowth of the preceding activity and contains potentialities which suggest the next step. Both the child and the scientist are anxious to identify their material. Most localities in this latitude have about ten species of toads and frogs. The coming of a new kind is an S. O. S. for identification. What is its name? Very few books meet this need yet it is a simple scientific step. The animal may be identified by the aid of a home-made colored chart of Amphibia on an ordinary window shade or by a simple key such as follows:

Skin rough ..... *Toad*
Skin smooth ..... *Frog*

Tips of toes with prominent disks
Length one inch, tan, with cross on back ..... *Spring Peeper*

Length two inches, green or gray, no cross ..... *Tree Frog*

Tips of toes without prominent disks
Fold of skin on sides
Length six to eight inches, green, fold of skin from eye to front leg ..... *Bull Frog*

Length five inches, green, fold of skin from eye to rump..*Green Frog*

No fold of skin on sides
Double row of dark spots on back
Spots rounded, greenish, yellow on under surface .....*Leopard Frog*

Spots squarish, brownish, orange on under surface.....*Pickerel Frog*

No spots on back
Brownish with black mask.*Wood Frog*

5. *Making a Home for the Toad:*

"The toad is backing into the earth!" a child shouts. "Can't he have a larger home the same as Meriel's?" another ventures. This is what the teacher anticipates and she brings out a picture of a school room terrarium for toads. It shows a shallow box into which is fitted a cage of ½-inch galvanized wire. At one end of the box is an enamel pan to hold water and the rest of the box is filled with loam to the height of the pan. The soil is covered with sheets of moss taken from boulders in the woods. A fern is growing in one corner. With the aid of flat stones a cave has been built as a "retreat" for the toad.

A lively discussion follows: Why a wire mesh? How large is a half-inch mesh? Where can we get the material? How much will we need? Ought we to make a paper pattern first? Where can we get tin shears? How shall we cut it? How shall be sew the open ends? How much will it cost? The toad enterprise has unlocked a sequence of arithmetic needs. Such new words as mesh, rust, enamel, galvanized, etc., find their way to the home-made dictionary for ready reference and future use.

6. *What Does the Toad Eat?*

The trained-teacher knows that an earthworm or fly or caterpillar now and then is relished by the most fastidious of toads. She also knows that the food must be in motion or the toad will ignore it. In a food emergency she knows that shreds of meat may be hung from a broom straw and dangled in front of his majesty. She knows that the ability to acquire knowledge is more important than knowledge. And so the children scurry away to find what a toad eats, how he drinks, and the other hundred-and-one interesting things about toads. How children love books about toads.

7. *Authority:*

Some things are to be observed and some things we have to learn through the observation of others. If we do not know what a toad or some other animal eats we have to accept such information on other people's authority. We have to be careful to distinguish between good and bad authority. Where did you find that, George? It will not be long before he presents a statement that is questionable. Even at a primary level he is acquiring attitudes in this respect and such statements as toads give warts, toads cannot swim, or some frogs climb trees should call forth the authority even though the teacher knows the answer. A library period on "what does a toad eat?" is followed by a discussion and the ultimate feeding of the toad.

The other day I went into the Third Grade of the Observation School. They had been reading about toads and frogs. I asked if they had any good books about toads and frogs. There was a rush for the library corner. To my surprise they even knew the pages. They improvised book marks with sketches of toads. The habit of finding a story, locating it with a book mark, and having it ready for use is an excellent habit in itself. I had eighteen books in a very short time. What a wealth of material, I thought, as I rather proudly hastened back to my office to indulge in toad lore.

But alas! What did I find? "Woggle gog swam to the mud holes to catch worms for supper. Pop! Off dropped his brown tail and in its place grew two fine back legs." What a mess of pottage. Tad-

poles are vegetarians, their tails are absorbed, and their back legs appear before the tail disappears. That book in the library must be a mistake. Let's look at another. "Toads sitting on their toadstools watched and smiled as the little frogs tumbled over the big frogs". The next story was about "A rat and a toad who went out for a walk", and the next explained "Why the rabbit has a short tail and the toad must go barefooted". Eleven of the eighteen books were just as grotesque. Such stories are neither classical nor scientific. They are not suited to what the child is trying to do. They are not authentic and should be removed. The child participating in vigorous book work about toads is having an intellectual and conversational experience which is vastly more challenging than filling time with idle reading. When the majority of children's books are an insult to child intelligence it is evident that we are not taking advantage of the child's power to think and create. Poor material should not be used because it happens to be about a toad.

At last I came to some realistic stories. Even some of them were wearing the scars of higglety-pigglety days and had the little toads going hippity-hop for shore or had *all* the frogs wearing coats of green. There were seven books in the collection that might be classed as realistic or near-realistic. Some were work-books obviously written to teach the child to study rather than as a story for enjoyment and recreation. In following this up I learned of one teacher who had but one factual book for over two hundred children. A meagre library surely means meagre results. We have belittled children. We are not furnishing them with suitable books for developing independence in getting factual material nor are we giving them intellectual security in leisure time reading. The lack of books of authority, I believe, is at present the weakest link in a well-rounded unit of study.

Authority may also come by way of the home. In this case teachers will need to use tact.

8. *Investigation:*

With the toad housekeeping attended to, which includes such important items as home, food, and drink, the teacher should be ready to "follow the child". When necessary he may wish to return to the library shelf, to make an improvement on the home, to make a supplementary field trip, to hold another period of conversation, to check up with the toad.

As the occasion arises the teacher seizes upon concrete instances to suggest an experiment, to suggest further observation, or to lead to a correct conclusion. One cannot predict what will arise nor can one lay down a set of rules for a teacher to follow in specific instances. This is the point where "teachers are born and not made". The skilled guide says and does what is expedient or suitable in a given circumstance.

Henry says: "The toad is slimy". You realize that he has heard that from some prejudiced grown up. You do not investigate that angle but pick up the toad and ask Henry to feel of the toad. If it is an older student perhaps you ask him to take off some of the slime for you to see. If the pupil has a "mortal fear" of toads perhaps you make an effort to find the slime and ask the student to suggest just where the slime is located.

In how many directions can the toad see? If the pupil has been studying geography he may say four, which are north, east, south, and west. He may say two ways, frontward and sideways. Take an apple and swing it closely around the toad. Is there any place where he cannot see the apple? Hold the apple above the head. Can the toad see it there? What enables the toad to see in so many directions?

The teacher recognizes that the building of fundamental concepts in science is an important factor in the child's education.

She realizes that it is not important whether the toad is slimy but it is important to be able to observe and believe one's own eyes. A teacher need not drill on the fact that a toad has bulging eyes which enables it to see in all directions. What the child needs is repetition of the opportunity to discover and test. The teacher should have a rich equipment of "things to do" which in the vernacular of science may be called experiments. Experiments are the pegs of experience on which the child weaves expanding concepts. Following are types of such experiments. To hear a toad sing: Hold a male toad in a loosely clasped hand and gently stroke him on the back.

How does a toad drink? Keep a toad in a box of sand for several days. Weigh and then stand in water for an hour. Weigh again.

Experiment to see whether a toad can swim. Does he use the "breast stroke"? The "kick" for the "breast stroke"?

Hold the toad. How does the temperature feel to the hand? What do we mean when we say that the toad is a cold blooded animal?

Place toad's eggs in a jar to watch them develop. In two months there will be enacted the drama of evolution. In each toad's egg there are potentialities which will develop into a tadpole and eventually a toad. In the mind of each child or each scientist are also potentialities for growth. The wise teacher will guide this growth.

9. *Recording:*

Whenever a scientist discovers anything he records it that others may read about it. Teachers in the elementary grades are recognizing the value of reading charts which portray, in short sentences, the child's activities and afford an opportunity for him to relive his experiences. Whatever the child's eye or ear or hand discovers should be recorded. Simple stories of where he found the toad, how he caught the toad, how he made a home for the toad, how the toad eats, what the tadpole does, and so on, should be illustrated by the child's own sketches, silhouettes, and magazine pictures.

10. *Organized Knowledge:*

A fund of scientific facts have resulted from observation, experimentation, read-

Adaptations of the Toad

Topic	*Characteristics*	*Advantage*
Color	brown	not easily seen against the earth background
Covering	warty	to blend into environment
Large warts	secrete a milky poison	to discourage enemies
Mouth	wide	to capture prey
Tongue	attached in front	to protrude a long distance
	sticky	to hold live food
Eyes	protrude	wide survey
	retract	to enter ground in winter
	third membrane	to shut out bright light
Ears	circular discs (Drums)	external ear would be in way
Nostrils	top of head	can submerge all but eyes and nostrils
Hind legs	strong, well developed	to hop
	toes slightly webbed	to swim
Front legs	small, toes-in	serve as props

ing, and discussion. This material has been recorded in reading charts. It should now be organized. It is suggested for example, that some of the information be organized in a table of adaptations. This table can be translated into sentences, then paragraphs, and later a story.

If children are taught to think in the order indicated they soon learn to think adaptations. They become conscious of the principle that animals are adapted to their environment. This method of learning is called induction. It is the scientific method.

11. *Educational Values:*

It is impossible to estimate the educational values that may result from the visit of the common garden variety of toad. A few of them are as follows:

It ties up with physical activity out-of-doors.

It calls for skill in arithmetic, hand work, and language.

It gives vital connections with the library and books.

It provides the realization that beauty may exist in the commonplace.

It furnishes opportunity for training in right habits and attitudes of mind.

It gives an appreciation of economic biology.

It gives an introduction to the fundamental laws of nature.

After Dinner

Dicky studies botany
And in a loose-leafed book
Assembles flowers of yesteryear,
Until the very look
Of April lifts before my eyes
Where coral embers stir;
Then yearningly the wintry night
Remembers her;
And Michael reads astronomy;
A faded notebook's store
Is a list of constellations
You never heard before;
He moves with Yed and Sirius
As easily as with Mars,
That sureness in his youthful voice
And a pocket full of stars;
I—well, I walk the April land
Or cleave familiar skies
And still I rest me by the fire,
Its flicker in my eyes.

KATHRINE HYMAS WILLIAMS.

Spring Nature Study in Kenosha Kindergartens

JANE E. VERNON

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IF this sketch were to be extended in terms of the values which in our little city we have felt to be, at early levels, the most vital and the most permanent, it is feared that some good-and-earnest "lesson-planners" might protest and say, "But that is not *teaching* Nature Study,—that is just—having fun!" Even at the risk of that protest, let's be unrestrainedly heretic long enough to expand the idea that "just having fun" with Nature is what we want Nature Study to be at early levels. For only as the child makes a joyous companion of Nature, and laughs, and runs, and shouts, and skips with her, can she reveal to him the intriguing fascination of her plays and games, the beauty of her language, and the rhythmic grace and music of her songs and poems.

Nature gives to every child the thrill of the explorer. In every Nature expedition new realms are discovered and new riches are unearthed,—each member of the crew sharing in the treasure according to his ability to find and to enjoy. And here lies our greatest opportunity to direct,—first, in providing frequent contacts,—and second, in helping the child to see Nature, to feel her, and to hear her. All of his senses must be attuned to her voice and her message if he is to learn her secrets in the fulness of their meaning. When the child meets Nature in this happy, joyous, receptive mood, she, herself becomes the teacher, and with rare tact and understanding she satisfies his desires for activity and rollicking comradeship,—feeds his natural love of beauty with sights and scenes which we can never hope to reproduce for him,—shows him an orderliness and system which our much-talking can never teach as well, and creates for him a satisfying happiness and contentment in the simple things at his hand.

One of the most important values in Nature Study at early levels, then, is the cultivation of the child's joy in healthful, outdoor contacts with Nature. At the beach,—the swish of waves, and a voice that says, "Come, race with me along the sand and see which one will beat"; the warm white sand sifted through tiny fingers, and the cool, wet sand moulded into great hills to tunnel through; shells and pretty stones to take home for ones own, or to add to the kindergarten Nature collection; the cry of gulls as they sail and dip like miniature airplanes above the water; a flash of white sail on the green of lake, and billows of silver-grey cloud against the blue of sky. Could a study in color be more harmoniously set?

And in the park,—the sunken-garden, hemmed in with trees and banked with lilac and rose bushes offers new Spring plants of every variety which soon will send fragrance from hundreds of gay blossoms over all this beauty-spot, set like a radiant jewel in a circlet of jade. Gaily colored butterflies float and drift,—quiver for a moment above a brilliant blossom, and float and drift again. Fairyland could not hold for a small child sights more entrancing. Here he learns reverence and respect for beauty, and a sense of his right to enjoy it completely if he guards it well for the enjoyment of others.

The lagoon glistens with merry ripples on which white and yellow water-lilies float like fairy boats; tiny frogs bob about on green lily-pads; water insects scoot here and there like tiny power-boats; bright box-turtles, water snakes, and shining fishes dart in and out between the rocks. And everywhere, birds and bird-calls; noisy sparrows scold and chatter perpetually as they hop from branch to branch in search of insects; the robin

pours out his Spring song from the topmost branches of a lofty elm, or tug, tug-tugs at a resisting worm on the lawn; the jay flashes in and out among the trees and sends out his shrill call in protest at a red-headed woodpecker's hammering on a nearby pole; dignified, perfectly groomed grackles strut back and forth, necks of shining green and purple glistening in the sun; tiny goldfinches dart through the leaves like glints of sunshine.

All of these things are offered for our seeking,—and toads and frogs, their eggs and tadpoles; caterpillars, their cocoons and marvelous transformations; the housefly, the bees and the ants, bringing interesting lessons in health and industry. This inexhaustible source of healthful enjoyment Nature offers the child as his rightful heritage. We must direct him in the understanding and appreciation of its usefulness and its beauty if he is to claim these riches in the fulness of Nature's giving.

Now, let's get back from our galloping all over the landscape, become a trifle more "orthodox", perhaps, and settle down to some specific experiences in Spring Nature Study. It must be evident, without much argumentation, that Nature Study, because of its inclusiveness, offers content material in which all school subjects are embodied. More perfectly than any other school subject it offers possibilities for unification of subject-matter. Our songs, our rhymes and poems, our stories, many of our plays and games, our experiences in community life and manual arts, in reading and in number are wrapt all about with Nature content. Perhaps this fact will find its application in some of the Spring experiences that follow.

In the last few days, something has happened in our aquarium with its winter inhabitants of goldfishes and snails. An observant child whose duty it is to feed the fish has noticed that on the glass in several places there are long strips of white, transparent substance "like jello." "Will it hurt the fishes, and had we better clean it off?" he asks. The teacher, who has been fearfully hopeful that such a happening might take place suggests that we leave it on the glass for a few days and watch it very carefully to see if anything "happens".

When the group gathers for conversation-about-things, the young naturalist tells his listeners about his discovery; his finding has to be verified by actual individual observation of the phenomenon, of course, and all agree to watch it every day to see what mystery it may reveal. After several days of watching, someone sights small black spots about the size of a wire pin head, scattered through the "jello-like substance. The teacher and the group are called to witness the change, and everyone is eager to know what the spots are and "what they will make". The teacher suggests that all go to the library-corner and "look it up" in the big Nature book, and perhaps there will be a story about the spots, and possibly pictures, too. (Of course, the wisely-planning teacher has anticipated all of this, and the stage is set for the action of the drama.) The story is found, and the pictures,—and with increased interest watching continues as from day to day the black eggs grow larger and larger,—finally break from the jelly-mass, and one morning are found scattered through the aquarium, no longer eggs, but tiny snails.

Thus, Nature unfolds another of her miracles before the children's eyes. And what have we, besides; vast amounts of oral English, interesting, live, vital in content; stimulation of the powers of observation, and the habit of clarifying and verifying projected ideas on the basis of observed facts. There is stimulated the habit of seeking varied sources of reference and information, as pictures and books, for further classification of facts observed. Picture-stories about the experience are drawn; original stories about snails are "made up"; a group-story is composed and written on the board by the

teacher, or typed, in order that each child may have a record of the experience. The several subjects in our curriculum of experiences are tied together in a unified, meaningful whole as we give the children another glimpse of that inexhaustible source of intriguing and everchanging events in Nature.

One morning, early in April, a dish-pan appears on the Nature table. It is half filled with water. As the children come into the room the more observant ones go to the table, look into the pan, see nothing but water in it, discuss the possibilities of "what's it for" and "what are we going to do with it", and as the group gathers several voices request an explanation. "It's a secret", the teacher says. "But tomorrow morning, if you'll look in the pan again, perhaps there will be a surprise for you." And surely enough, the next morning there is a surprise. A stick with some grass clinging to it floats on the water, and out from the stick drifts a dark-colored, gelatinous mass. There is much speculation as to what the queer stuff may be, and as this is a new experience and no one can "guess" what it is, the teacher calls the group together and asks them to sit down and listen to the story about it. Very simply and briefly she tells then the interesting sequences in the life history of the frog from the egg stage, through the tadpole stage, and up to the time of coming into frog's estate. This is an especially good sequence of development for children to observe because the changes take place so rapidly.

Every day the children watch the changes in the eggs, and in the tadpoles; and every day there are books and pictures on the library table which help them to organize and clarify their ideas. Then further observation verifies their findings in reference material, and so on to the culmination of another of Nature's interesting evolutions. Frog stories are created and recorded; frog couplets are composed, and a frog song is learned, (Mr. Frog, in Neidlinger's "Short Songs for Small Singers").

Here is one of the couplets from a five year group that had an interesting experience with frog's eggs.

"A frog sat on a log and said, 'Croak, croak, croak'.
And *Splash!* he jumped in the pond".

The couplet reflects rhymes and songs that this small girl had heard, no doubt,—but it was given very dramatically, and was distinctly hers in feeling. It was entered with others in the group's original verse book, and a child who had drawn some interesting frog pictures, illustrated the couplet.

This is a boy's story,—also from a five-year group.

"There was a frog. First he was an egg. Then he was a tadpole because he had a tail. And then he was a frog with jumping-legs. That's the end."

This record, through brief, suggests an orderly sequence of events as the experience registered itself for one small boy.

These experiences, vitally interesting to children, suggest another example of the manner in which the various phases of the curriculum are drawn together and united with a central thread of interest based on Nature Study.

In one of our outlying kindergartens in which the group is relatively small, numbers of healthy Wandering Jew and bright foliage plants had been cared for zealously by the children through all the fall and winter months. Many of the plants needed thinning, and the teacher planned to make cuttings from them, enough to supply each child with a tiny plant.

The children had been told that they were to have a number of baby plants, and the group decided that the sand-table was the biggest place for so large an indoor garden. The children removed the sand from the sand-table and put it into boxes for future use. Then came the problem of getting black earth for the little

plants to grow in. It chanced that digging was going on near the school in preparation for building. Arrangements were made to procure some of the earth. Equipped with small shovels, an express cart, and boxes, the five year group transformed itself into a digging-gang, and dug, and brought to the kindergarten enough earth for the sand-table and for some small boxes, beside.

You can picture the busy days that followed when filling the sand-table, preparing the soil, and planting the tiny plants were in process. You can imagine the thrill of having a plant all of one's own, of planting it, and having it grow to be a healthy, strong plant under one's particular care.

A few weeks before Mother's Day, the plants were transplanted by the children into individual pots to be taken home as Mother's gift. But before the exodus, other things developed. A child said that the kindergarten looked like a greenhouse, and that suggestion was all that was needed to stimulate the desire to build a greenhouse like one in the neighborhood. The structure was completed and the potted plants were moved into it, and a very realistic greenhouse it was.

Other unifying experiences that developed with the Nature interest were planning and discussing things to do and ways and means of doing them; printing signs; learning songs and rhymes about plants and flowers; hearing and composing stories about growing things; drawing and painting pictures to be used in the greenhouse; playing host and hostess to the first grade children who came to see the greenhouse, and hear the songs and stories about it.

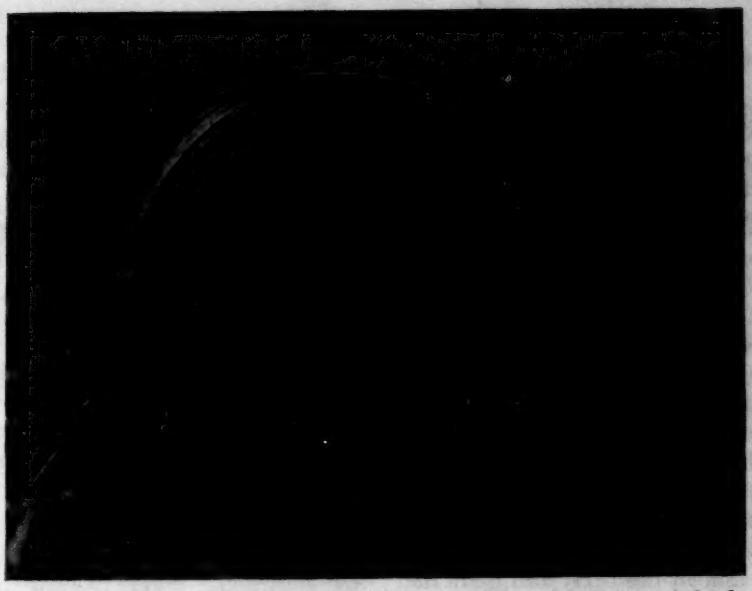
It is impossible to describe in this article all of the Nature experiences that will be carried out in Spring activities. The cocoons that caterpillars so obligingly spun for us in the fall will reveal another miraculous transformation. A visit to a neighborhood chick-hatchery will provide an absorbing adventure, and will add some tiny chicks to our kindergarten pets, to watch and to care for. A pair of rabbits will come to live in the cage that has been so eagerly prepared for them. They will go home for the week-end with the small boy who owns them, but during the week there will be opportunity to learn about their food, their habits, and their care. Germinators made by placing swollen seeds of corn, peas, beans, between the sides of a glass and the center of wet cotton or cylinder of blotter will show rapid development of root, stem and leaf as they burst from the seed-case; and the same seeds planted in window-boxes will show the natural development from the soil. Bare twigs gathered early in the Spring will throw back their brown bud coats of winter and don new green finery for warmer days.

All of these engaging experiences Nature provides. We have only to train ourselves to be alert for every opportunity to lead the child into fields of interest in which he will find pleasure and contentment in the things of his environment.

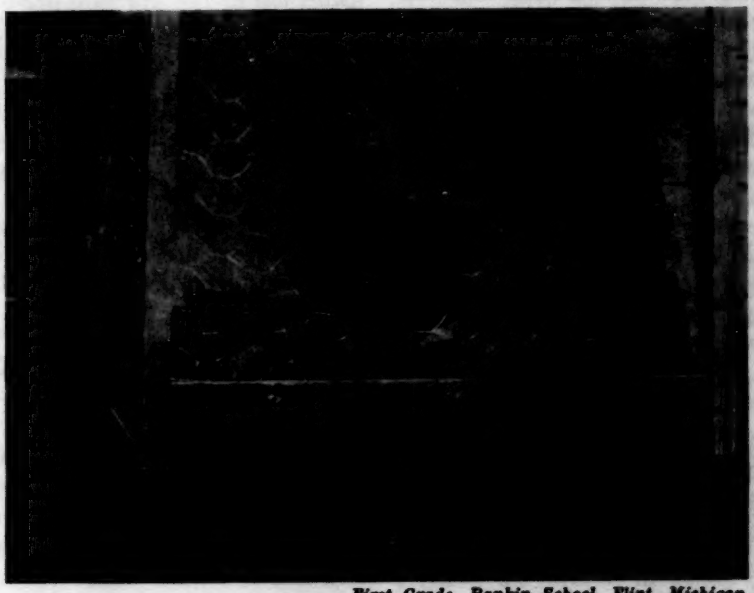
Lambs

A little wooly lamb
Went out one day
Into the meadow
To eat some hay.
He ran and he frisked
And he jumped all the way
For that is how
A lamb does play.

Evelyn, Age 6½
University of Chicago Elementary School



The hen was "borrowed" for a period of four or five weeks, and cared for by the children. Trips were taken to buy the eggs, the feed and the straw. The coop was made and wheat planted in the sand table, which was converted into a garden plot during the unit of work.



First Grade, Rankin School, Flint, Michigan

Opportunities for all phases of school room work such as reading, language, writing and spelling were utilized to good effect.

Children and Trees

ADA R. POLKINGHORNE
First Grade Teacher, University Elementary School, The University of Chicago, Chicago, Illinois

WHENEVER the snow is falling
And the cold North Wind is calling
And I pass by a bare old tree
It seems to say "Hello" to me.

This rhyme, written by a second grade child, expresses the relationship which should exist between children and trees. Children should learn to regard trees as friends. They should never be expected or encouraged to be sentimental about them, but they should learn to appreciate them. The child who wrote these lines one day in the late fall, was not sentimental. He had learned to think of trees as friends. Many enjoyable contacts with trees had been planned for him in the early fall. He had played "Tag", "Hide and Seek", "Changing Trees", and other games among the trees in the children's garden. He had climbed the trees and then had rested in their shade. He had learned to recognize some of the common trees by their shape and by their leaves. He had shared in several discussion periods during which the children talked about the various uses of trees. He had listened to poems and stories about trees. And now, in spite of the fact that the trees were bare, he still felt they were his friends.

Of course, there is but one way to develop this friendly attitude toward trees and that is through the right kind of teaching. There must be a systematic program which begins in the nursery school and continues for several years. The teaching must be a process of conditioning the children into desirable attitudes, understandings, and habits of behavior toward trees. And attitudes, understandings, and habits of behavior are acquired from experiences and not from talking. Children must go out of doors where the trees are in order to know them. They must play with the trees and they must study them. Their play and their study must be natural and informal. The program must include activities which the children enjoy and which they frequently use in their unsupervised play.

The children's experiences with trees must be planned so that they will always be helpful. It is possible to give children experiences with trees which are positively harmful and which lead to destructive behavior rather than toward a friendly and protective attitude. For example, a young teacher took her kindergarten children out, last fall, to play in the dry leaves. The children scampered about in complete abandon. They rolled in the leaves. They tossed them about. They piled them in stacks and then jumped into them. They chased the leaves as the wind blew them along the ground. All of this was normal, childlike play. The children's only purpose was to have a good time with the leaves and they had it. The impression which remained after this outdoor period was chiefly this, a good time with the leaves. And had the young teacher stopped here, she would have done a first rate piece of teaching, but she followed this experience with one which undid all she had accomplished. The next day she took the children out of doors with baskets. At her suggestion they gathered a great many leaves and took them into the school room. Then, also at the teacher's suggestion, the children dramatized the familiar poem, "Come Little Leaves." Several of the children stood on chairs and played they were trees. The other children decorated them with leaves. They filled the tree children's hands with leaves and they pushed the leaf stem into their clothes, wherever they would stay. When the trees were ready, the dramatization began, and by the time it was over the dry leaves

were broken all over the floor. As a last part of this experience, everyone had to help to clean up.

Now, there are several fundamental differences between the two experiences which this teacher provided for her children:

1.—The activities in the first experience were initiated by the children. The teacher placed them in a natural situation and they took advantage of it. It was not necessary for the teacher to set the stage. Nature had done that. It was not necessary for her to suggest the activities. The abundant material and the children's own interests were sufficient stimulation. But in the second experience, the teacher initiated the activities. The situation was not natural and consequently the children worked from directions instead of following their own ideas.

2.—In the first experience, the children's play was informal and childlike. It was the kind of play in which children engage when they are left to their own initiative. In the second experience, the play was formal and unchildlike Children never imitate the phenomena of the nature world when left to their own devices. Children never fly like birds or dance like leaves of their own accord. And yet they are asked to do these things over and over again in school.

3.—In the first experience, many of the leaves with which the children played were broken. But there were so many leaves and those that were broken fell to the earth unnoticed. It is natural for leaves to fall to the ground and to turn into dust upon the earth to add richness to the soil. It is not natural for leaves to fall upon a school room floor and to be broken into dust which has to be swept up by the children before they can go on with the next activity. Children can not fail to become conscious of the destruction they have caused, after such an experience.

For these reasons, then, it is evident that the second experience which this young teacher selected for her children was not only unchildlike but it was also harmful. The first experience helped toward the development of an attitude of interest in trees. The second experience tended to build up an attitude of disinterest and to develop a habit of destructive behavior.

The examples from the work of this young teacher demonstrate the need for care in planning the program. It is possible to plan a series of experiences with trees which begin in the nursery school and which function in developing certain desirable attitudes, understandings, and habits. Such a plan is offered here. In this plan, the experiences are not graded since some groups of children are ready very early for experiences which can not be given to others until much later. Much depends upon the previous experience of the children. Some homes provide a rich background while others can give very little. The teacher must determine by observing her children's behavior in the field, just where they are and she must begin there. Some experiences need to be given only once. Others must be given over and over again. It is not possible or desirable to give all of these experiences to a single group in one year. Some experiences may be repeated year after year with profit. It is only from repetitions of experience that children can begin to make generalizations. There are many experiences besides those which are listed here, which are valuable. And some of these are not necessary. But if somewhere in the primary school, the children can have most of these experiences, it is believed they will not be as ignorant about trees or as careless in preserving them as the past generations of adults have been.

Fall Experiences With Trees

Outdoor play among trees.—Children

should play every day, where there are trees. When given this opportunity, they will frequently use the trees in their play. If the game is "Tag", the trees are often the goal. If it is "Hide and Seek", the trees make fine hiding places. Such activities lead the children into contact with the bark of the trees and provide them with the knowledge of how it feels as well as how it looks.

Listening to stories and poems while sitting in the shade of the trees.—Outdoor literature periods may be used advantageously on warm days in conditioning children into desirable attitudes toward trees. It is only necessary to take the children into the cool shade on warm days to give them an appreciation. Nothing needs to be said about it. Repeated experience is worth more than much talking.

Resting under the trees.—After strenuous play in the sunshine, children are glad to lie on the grass in the shade of the trees and have a good rest.

Playing in the fallen leaves.—A good romp in the fallen leaves is always enjoyed by the children. And as has been seen, it is worth while from the teacher's standpoint, also.

Making a collection.—Fall is the time of the year for making a collection of leaves, of fruit, or of nuts. The trees drop many of these treasures upon the ground where the children can easily gather them. There can be no question about the value of this experience where it is possible to provide it. Of course, leaves are to be found almost everywhere. And acorns and other tree seeds are often available. The leaves may be gathered for mulching the fall garden. Fruit may be eaten or preserved for a party later on. Nuts may be gathered for the Thanksgiving party. Acorns and other nuts or seeds may be fed to the squirrels.

Observing changes in the color of the leaves.—Children like to collect leaves of different colors to mount in their leaf books or on charts. They can not make such a collection without noting that the leaves change from green to yellow, red, or brown.

Making blue prints.—A variation from pressing leaves, which the children enjoy, is blue printing them.

Drawing and painting leaves and trees.—Children draw and paint trees and leaves at first as they think they are. Observations should help them to draw these objects as they really are.

Climbing trees.—When it is possible, the children should have an opportunity to climb trees. Low trees such as fruit trees which are old enough, should be used for this purpose.

Learning to recognize the common trees.—This necessitates field study. Children can not sit in a school room and learn to recognize trees. They must go where the trees are. They must learn as soon as possible, that there are times for play and times for work in the field as well as in the school room. If they are to learn the trees they must be willing to work. The only way to learn the trees is to look at them carefully in their own environment and to see their leaves, their bark, their general shape, their branching, their seeds, etc. Visiting the same varieties of trees over and over again in different situations and making careful observations each time is the most effective method of learning to know them.

Learning how trees are used. — The children will enjoy making a list of the ways in which trees are used. They may make this list from their observations. Henry Abbey's poem, "What Do We Plant?" is an excellent introduction to this activity.

Finding out what the inside of a tree is like.—If a tree is cut down anywhere near the school, the children should be taken to see what it looks like inside. If there is no such opportunity, a cut section from a tree, showing the annual rings, the bark, etc., should be used. The children should learn from this experience that there is wood inside the bark of the trees. The blocks they build with, the boxes and boards they use in constructing their buildings, and many other things are made of wood. They may also learn about the cambium layer and its use to the tree. Children who have had this experience can work intelligently in making a list of the ways in which trees are used.

Learning how trees grow. — Children should plant some seeds of trees and watch them grow. Maple seeds are easy to find. Apple seeds, grapefruit seeds, and others do well in pots in a sunny window. It is often possible to find an acorn that has sprouted. This may be placed in the earth and it will grow. From these activities, the children should learn that trees must eat, drink, and sleep in order to grow. They have exercise, too, when the wind blows them about. And from observation of larger trees, the children should find out that trees grow in thickness and from their extremities.

Winter Experiences With Trees

While there are not as many experiences with trees in the winter program, those which are suggested are important:

Playing the game "Changing Trees."

Visiting the bare trees.—The children should go out of doors and visit the trees in the winter. They should see how they look when their leaves are gone. Winter

is a good time to observe the shape and the branching of the trees. It is a good plan to try drawing the trees as they look in the winter.

Christmas trees.—Some trees are green in the winter, but not all of the trees that stay green all the winter are suitable for Christmas trees. If the children live where there are pines, spruces, and other evergreens they may make comparisons and find out why the spruces and balsam firs are used.

Playing games. — *Arbo* and *Matchit* are interesting tree games which are published by the Scholastic Publishing Company of Pittsburgh, Pennsylvania. The children could try making some games after they have used these.

Enjoying literature on trees.—The children like to listen to groups of poems about trees after they have had interesting experiences with them. Sometimes the children enjoy making their own poems and stories.

Discovering further uses of trees.—Find a tree that has a bird's nest in it and see how the trees help the birds. Find a tree that has a squirrel's nest in it and learn how the trees help the squirrels.

Discover the differences between trees, shrubs, and vines. — Visit several trees, several shrubs, and several vines. Find out how trees differ from shrubs and how they differ from vines.

Spring Experiences With Trees

Many of the experiences with trees which the children enjoyed in the fall may be repeated in the spring. Some can not be repeated. There are many new activities for the spring.

Visiting the trees in the spring. — The children should visit the trees in the spring when the buds are swelling. They may bring in some twigs and place them in water. The leaves will open and sometimes apple blossoms will develop quite fully in water. These twigs should never be broken from the tree. They should be cut off. Children who are having this experience indoors will observe what is going on out of doors and they will often bring in twigs and branches which show the progress of the buds and of the leaves. This is a good time to teach the children that it is better to go out and watch the trees than to take too many branches from them. The children can always suggest why this is so.

Making tree diaries. — Each child chooses a tree, early in the spring, and keeps a record of that tree's progress in budding, in leafing, and in blossoming.

Observing dependence of animals upon plants. — As soon as the mulberry trees are in leaf, feed some of the leaves to silkworm larvae. Learn how the trees help the silkworms. See how some birds, such as the creepers, get food from the trees.

Planting a tree. — Sometimes it is possible for the children to have the experience of planting a tree. After it is planted, the children should assume the responsibility for the care of this young tree.

The Birches

The little birches
White and slim,
Gleaming in
The forest dim,
Must think the day
Has almost gone
For each one has
Her nightie on.

Betty Lou, Age 7.
University of Chicago Elementary School

NEWS FROM HEADQUARTERS

MARY E. LEEPER

A. C. E. BOARD MEETING

The mid-winter meeting of the Executive Board of the Association for Childhood Education was held in Washington, District of Columbia, on December 28, 29, and 30. All the officers were present. Upon invitation, Dr. Julia Hahn, former Chairman of the National Council of Primary Education was present and participated in the discussions.

The outlining of the program of the annual convention to be held in Washington, May 4th through the 7th, decisions on financial matters, planning for the continued success of the Journal, and the discussion of various problems relative to the Association, its growth and its service, occupied the attention of this group throughout the three days.

STUDIES OF ENVIRONMENT

The first A. C. E. bulletin for this year, *Studies of Environment,* edited by Beryl Parker, should prove of very practical help to teachers of kindergarten and the primary grades. Training School teachers and supervisors and principals will find it a source book to which they may direct their students or teachers in service. It clearly points out the selection of activities to enrich experience, the way of managing trips and the possible outcomes of excursions.

Dr. Parker charmingly describes School Journeys in Europe and transports one to Hamelin Town where one relives the story of the Pied Piper. As she puts it, "To me the Pied Piper has become the symbol for a new teacher—one who leads the child out into the world, then guides him back into the school; one who shares the child's experiences and thus finds life more interesting and education more vital."

This bulletin has been mailed to each contributing member of the Association for Childhood Education, and to the president of each Branch of the Association for Childhood Education. Those who are not members but feel that it will help them in conducting school excursions may purchase it from Headquarters, price $.50.

DOROTHY CADWALLADER,
Secretary and Treasurer.

MEMBERSHIP MESSAGE

You are a reader of this magazine and by that very fact you evidence your interest in the education of young children. Are you also a member of the Association for Childhood Education which publishes this magazine—an organization devoted to promoting the best in nursery, kindergarten and primary education? If not you should join today and add your name and your contribution to those of others interested in helping our nation "to move forward on the feet of little children." Contributing membership of one, five or ten dollars may be sent to Headquarters, 1201 16th Street, N. W., Washington, D. C.

FRANCES KERN,
Chairman of Membership Committee.

A HINT FROM PORTO RICO

Josefita Monserrate, of the University of Porto Rico, writes as follows:

"I shall be glad if you will consider me your agent for CHILDHOOD EDUCATION in Porto Rico. I want you to know how I intend to invest my commissions on the subscriptions. I am going to buy the publications of the White House Conference. I will read these books and then send them to the different teachers who have subscribed for the Journal. After these teachers have read them I will use them at the University for reference work with the student teachers in my classes. I will start a circulating library in this way."

THE OREGON BULLETIN

The December Bulletin of the Oregon Association for Childhood Education is brimming with interesting facts and suggestive ideas.

If your Branch is in need of ideas write to Mrs. Claire Crout, 5303 42d Avenue, Portland, Oregon, and ask for one of these bulletins.

1932 Convention
Association for Childhood Education

THE Thirty-ninth Annual Convention of the Association for Childhood Education will meet in Washington, D. C., May 4th to 7th, 1932, inclusive of both dates. The Willard Hotel, selected for Headquarters for the Convention, is located on historic Pennsylvania Avenue at 14th Street. The Hotel is in the heart of Washington's shopping and theatre district, and is within the proverbial stone's throw of the White House, the Treasury Department, and the majority of the most important federal buildings. Immediately opposite the Hotel is the magnificent new Department of Commerce, in which it is hoped we may be able to hold some of our meetings. The business sessions of the Convention will be held in the Hotel and all the Commercial and Educational Exhibits will be located there.

For those who may desire accommodations in the residential sections there is the Shoreham Hotel at Conn. Ave. and Calvert Street, and the Wardman Park Hotel, 2660 Woodley Road, both of which command extensive views of our beautiful Rock Creek Park.

The evening meetings of the Convention will be held in Memorial Continental Hall, the national home of the Daughters of the American Revolution, a very beautiful building, full of historic associations, and within easy walking distance of our Headquarters.

While the local committees have the plans of the Convention well under way, the final arrangements are still too indefinite to give out at present. We can, however, promise that this convention will offer many educational and social opportunities. A drive has been planned to show some of the beauty spots and interesting shrines in and about Washington and the trip to Mt. Vernon will be along the beautiful new Memorial Highway, stretching for about fifteen miles from the Arlington Memorial Bridge along a route skirting the Potomac River, said to be "the finest stretch of highway in the world."

Washington will wear its loveliest dress in the spring, the weather in May is usually cool, and the city and its people will do everything possible to welcome the Convention Delegates and friends to their national home.

LOUISE G. HUGHES.

HOTEL	Rooms	Single With Bath	Double With Bath	Single Without Bath	Double Without Bath
Burlington Vermont Ave.-Thomas Circle	200	$3.00-$4.00	$5.00-$7.00	$2.50	$4.00
Dodge North Capitol and E Streets	300	3.00- 5.00	5.00- 8.00	2.50- 3.00	4.00-5.00
Hamilton 14th and K Streets	300	3.50- 4.00	5.00- 7.00		
Lafayette 16th and Eye Streets	200	4.00- 6.00	6.00- 8.00		
Lee House 15th and L Streets	210	3.50- 5.00	5.00- 8.00		
Mayflower Connecticut Ave & De Sales St.	650	5.00-10.00	7.00-15.00		
Powhatan Pennsylvania Ave. and 18th St.	220	3.50- 5.00	5.00- 8.00		
Raleigh 12th St. and Penna. Ave., N.W.	460	3.50- 5.00	5.00- 8.00	2.50	3.50-4.00
Shoreham Calvert Street and Conn. Ave.	300	5.00- 6.00	8.00- 9.00		
Washington Penna. Ave. and 15th St., N.W.	400	5.00- 8.00	8.00-12.00		
Willard Penna. Ave. and 14th St.	475	4.00- 7.00	6.00-12.00		

BOOK REVIEWS

Editor, ALICE TEMPLE

A NATURE BIBLIOGRAPHY

Compiled by Ada R. Polkinghorne

THIS does not pretend to be an exhaustive bibliography. Instead, an effort has been made to select from the most recent and the older literature of the subject, those books which are of real value for the work in nature study with the younger children.

BOOKS FOR THE TEACHER

1.—GENERAL TEXTS:

AMERICAN NATURE ASSOCIATION. *The Nature Almanac.* A Handbook of Nature Education. Washington, D. C.: The American Nature Association, 1931. Pp. viii+399. Contains a nature calendar, a school nature outline, and a very full nature bibliography in addition to reports on the present status of the teaching of nature study.

COMSTOCK, ANNA BOTSFORD. *Handbook of Nature Study.* Ithaca, New York: Comstock Publishing Company, 1929. Pp. 938. $4.00. Classic handbook for teachers.

DEPARTMENT OF SUPERINTENDENCE OF THE NATIONAL EDUCATION ASSOCIATION. *Fourth Yearbook.* Washington, D. C.: National Education Association, 1929. Pp. 529. $2.00. An excellent statement of the aims, methods, and organization of the work in nature study.

DOWNING, ELLIOT R. *Our Living World.* New York City: Longmans, Green and Co., 1928. Pp. 494. $2.00. A valuable sourcebook of materials and methods in biological nature study.

HODGE, CLIFTON F. *Nature Study and Life.* Chicago: Ginn and Co., 1902. Pp. 514. $1.88. A text book in nature study.

HOLTZ, FREDERICK. *Nature Study.*. A Manual for Teachers and Students. New York City: Charles Scribner's Sons, 1909. Pp. 546. $2.00.

NATIONAL SOCIETY FOR THE STUDY OF EDUCATION. *The Year Book of the National Society for the Study of Education.* Bloomington, Illinois: Public School Publishing Co., 1932.

PALMER, E. L. *Fieldbook of Nature Study.* Ithaca, New York: Slingerland-Comstock Co., 1930. $3.25. Of great value for use in the field.

RESEARCH COMMITTEE, MICHIGAN ASSOCIATION FOR CHILDHOOD EDUCATION. *Nature Study Units and Suggestions for the Early Elementary Grades.* Three Rivers, Michigan: The Three Rivers Press, Pp. 129 Teacher's descriptions of children's experiences with nature.

STEVENS, BERTHA. *Child and Universe.* New York: The John Day Co., 1931. Pp. xxii+249. $3.75. Written by a primary teacher for the class room group teacher in primary grades, and for parents. Central purpose is to show the power of universe study to effect the thought and development of children.

VON WYSS, C. *The Teaching of Nature Study.* London, England: A. and C. Black, 1927. Pp. 101. 12s. 6d, net. The Macmillan Company of Chicago are now handling this book which presents an interesting discussion of the aims, the methods, and the materials for nature study.

2.—BOOKS ON ANIMALS:

General Manuals and Texts

Nature Lover's Library. Vols. 1-3, Birds of America; Vol. 4, Mammals of America. Vol. 5, Mammals of Other Lands; Vol. 6, Birds of Other Lands, Reptiles, Fishes, Lower Forms. New York: University Society. Pp. 2000. $34.50 or $5.75 per volume. Well illustrated reference books. Valuable for school nature library.

COMSTOCK, ANNA B. *The Pet Book.* Ithaca, New York: Comstock Publishing Company,

1927. Pp. 310. $3.50. A thoroughly reliable manual which explains in detail, how to care for pets.

WALKER, EDITH B., AND MOOK, CHARLES C. *Tales of the First Animals.* Il. by Jane B. Bartley. New York: Ferrar and Rinehart, 1930. Pp. 120. $1.50. Concise stories of the first animals.

PYCRAFT, W. P. *Standard Natural History.* New York: Frederick Warne, 1930. Pp. 960. $6.00. Good reading and a standard reference.

CLARK, AUSTIN H. *Animals of Land and Sea.* New York: D. Van Nostrand Co., 1927, Pp. 312. $3.00. Interesting descriptions of the activities of animals.

DUNCAN, FRANCIS M. *Cassel's Natural History.* New York: Funk and Wagnalls Co., 1913. Pp. 432. $5.50. Informational material about animals. Simply written and well illustrated.

HORSFALL, R. BRUCE. *Bird and Animal Paintings.* Washington, D. C.: Nature Magazine, 1928. Pp. 58. $1.00. Fine colored pictures of birds, animals, and insects with informational material.

JORDAN, DAVID STARR. *Manual of Vertebrate Animals.* Yonkers on the Hudson, New York: World Book Co., 1929. Pp. 446. $4.00. A classic handbook.

BIRDS

CHAPMAN, FRANK M. *Handbook of the Birds of Eastern North America.* New York: David Appleton and Co., 1923. Pp. 530. $4.00. A best manual.

REED, CHESTER A. *Bird Guide.* Land Birds East of the Rockies. Garden City, New York: Doubleday Doran and Co., 1925. Pp. 238. $1.50. A convenient handbook for use in the field.

REED, CHESTER A. *Bird Guide.* Water and Game Birds East of the Rockies. Garden City, New York: Doubleday Doran and Co., 1921. Pp. 240. $1.50. A first rate handbook for use in the field.

DUGMORE, ARTHUR R. *Bird Homes.* The Nature Library. Vol. 39. New York: Doubleday, Page and Co., 105. Pp. 183.

MAMMALS

GASK, LILLIAN. *All About Animals.* New York: Thomas Y. Crowell Co. Pp. 261. $3.00. Excellent reference material which may be used by third grade children, and teachers below the third grade.

JENNISON, GEORGE. *Natural History Animals.* New York: The Macmillan Co., 128. Pp. 344. $4.50. Profusely illustrated informational material on animals. May well be used in a third grade nature library. The pictures are useful below the third grade.

MCNALLY, GEORGIA M. *The Babyhood of Wild Beasts.* New York: George H. Doran and Co., 1917. Pp. 232. $3.00. True stories of animals.

INSECTS

LUTZ, FRANK E. *Fieldbook of Insects with Special Reference to Those of Northeastern United States.* New York: G. P. Putnam's Sons, 1929. Pp. 562. $3.50. Probably the best fieldbook.

COMSTOCK, JOHN H. *An Introduction to Entomology.* Ithaca, New York: Comstock Publishing Company, 1929. Pp. 1044. $6.00. A best manual.

FISH.

INNES, WILLIAM T. *Goldfish Varieties and Tropical Aquarium Fishes.* Philadelphia: Innes and Sons, 1929. Pp. 300. $4.00. An excellent guide.

MELLEN, IDA M. *The Young Folks Book of Fishes.* New York: Dodd Mead and Co., 1929. Pp. 160. $2.00. Interesting, authentic material about fish. Illustrated with photographs.

REPTILES AND AMPHIBIANS

DITMARS, RAYMOND L. *Reptiles of the World.* New York: The Macmillan Co., 1927. Pp. 373. $4.00. Informational material about animals.

WRIGHT, ALBERT H. *Life Histories of North American Anura.* Washington, D. C.: Carnegie Institution, 1914. Pp. 105. Life histories of frogs and toads.

3.—BOOKS ON PLANTS:

General Manuals and Texts

BROWN, A., *and* BRITTON, N. L. *Illustrated Flora of the Northern United States and Canada.* 3 Vols, New York: Charles Scribner's Sons, 1913. $13.50. The standard manual.

KENLEY, JULIE C. *Green Magic.* New York: David Appleton and Co., 1930. Pp. 184. $2.50. Informational material, interestingly written.

PARKER, BERTHA M. AND COWLES, HENRY C. *The Book of Plants.* Boston: Houghton Mifflin Co., 1925. Pp. 252. $0.88. Stories about plant life which are accurate and well written.

TREES.

HOUGH, ROMEYN B. *Handbook of the Trees of the Northern States and Canada.* Lowville, New York: Romeyn B. Hough Co., 1924. Pp. 470. $8.00. A well illustrated manual on trees.

HOUGH, ROMEYN B. *Leaf Key to the Trees.* Lowville, New York: Romeyn B. Hough Co., 1910. Pp. 63. $0.75. A small pocket guide to the trees.

SHRUBS

KEELER, HARRIET L. *Our Northern Shrubs.* New York: Charles Scribner's Sons, 1916. Pp. 521. $3.00. Illustrations and descriptive material which are helpful in the identification of the shrubs.

FLOWERS

MATTHEWS, F. SCHUYLER. *Book of Wild Flowers for Young People.* New York: G. P. Putnam's Sons, 1929. Pp. 558. $3.50. An excellent source book.

REED, CHESTER A. *Flower Guide East of the Rockies.* Garden City, New York: Doubleday Doran and Co., 1911. Pp. 228. $1.50. A best handbook for use in the field.

WEEDS

GEORGIA, ADA E. *Manual of Weeds.* New York: The Macmillan Co., 1914. Pp. 593. $3.00 Valuable for identifying weeds.

GARDENING

KILPATRICK, VAN EVRIE. *The Child's Food Garden.* With a Few Suggestions for Flower Culture. Yonkers-on-Hudson, New York: World Book Company, 1919. Pp. 64. $0.36. An excellent guide for the work with school gardens.

4.—BOOKS ON PHYSICAL NATURE STUDY

GENERAL MANUALS AND TEXTS:

DOWNING, ELLIOTT R. *Our Physical World.* New York: Longmans, Grreen and Co., 1925. Pp. 367. $2.00. A sourcebook of physical nature study.

EARTH

LOOMIS, F. B. *Fieldbook of Common Rocks and Minerals.* New York: G. P. Putnam's Sons, 1929. Pp. 278. $3.50. Interesting sourcebook.

REED, W. MAXWELL. *The Earth for Sam.* New York: Harcourt, Brace and Co. 1931. Pp. 390. $3.50. A story of life from the beginning of the earth to the beginning of history.

WEATHER

MILHAM, WILLIS I. *Meteorology.* New York: The Macmillan Co., 1912. Pp. 549. $4.00. A text book of the weather.

SKY

REED, W. MAXWELL. *The Stars for Sam.* New York: Harcourt, Brace and Co., 1931. Pp. $3.50. "The story of the Universe from the sun to the farthest galaxy of stars."

5.—MAGAZINES AND PAMPHLETS

———Cornell University Leaflets. Ithaca, New York: Cornell University.

AMERICAN NATURE ASSOCIATION. Nature Magazine. Washington, D. C.: The American Nature Association, $3.00 a year.

PROGRESSIVE EDUCATION ASSOCIATION. Progressive Education. Special Number. Vol. VIII, No. 6, October, 1931. "The Child and Science." Washington, D. C.: Progressive Education Association. $.50.

GENERAL BIOLIGICAL SUPPLY HOUSE. Turtox Service Leaflets. Chicago: General Biological Supply House. Free.

BOOKS FOR THE CHILDREN

1.—GENERAL BOOKS:

CARR, WILLIAM H. *The Stir of Nature.* New York City: Oxford University Press, 1930. Pp. 208. $2.50. A general text for children at third or fourth grade. Well illustrated by Thomas W. Voter. "A book for young American Naturalists."

PATCH, EDITH M. *First Lesson in Nature Study.* New York City: The Macmillan Company, 1926. Pp. 287. $1.12. A valuable book for the library table in any primary room.

2.—READERS:

ALBRIGHT, NORA AND HALL, JENNIE. *Nature Stories for Children.* Book I. Pp. 96. $0.72. Book II. Pp. 96. $0.72. Chicago: Mentzer, Bush and Co., 1927.

DUNN, FANNIE W. AND TROXELL, ELEANOR. *Mother Nature Series.* Baby Animals. Pp. 160. $0.68; *By the Roadside,* pp. 256, $0.76; *In Field and Forest,* pp. 288, $0.80. Evanston, Illinois: Row, Peterson and Co., 1928.

EDWARDS, PAUL GREY, AND SHERMAN, JAMES W. *The Nature Activity Readers.* Book One, *Outdoor Land,* pp. 131, $0.72; Book Two, *The Outdoor Playhouse,* pp. 175, $0.76; Book Three, *The Outdoor World,* pp. 270, $0.88. Boston: Little, Brown and Co., 1931.

GORDON, EVA AND HALL, JENNIE. *Nature Stories for Children. Autumn,* pp. 90, $0.72; *Spring,* pp. 88, $0.72. Chicago: Mentzer, Bush and Co., 1926.

HOLTZ, GRACE AND HALL, JENNIE. *Elementary Science.* Chicago: Mentzer, Bush and Co., 1930. Pp. 166. $0.80.

NIDA, WILLIAM L., AND NIDA, STELLA H. *Science Reader.* Book I. *Our Pets,* pp. 162, $0.80; Book II, *Trailing Our Animal Friends,* pp. 218, $0.88; Book III, *The Baby Animal Zoo,* pp. 246, $0.88. Boston: D. C. Heath, 1928.

PAYNE, E. GEORGE, BARROWS, HENRY R. AND SCHMERBER, LOUIS J. *Elementary Readers.* Book One, pp. 184, $0.72. Chicago: Benj. H. Sanborn and Co., 1931.

PERSING, ELLIS C. AND PEEPLES, E. K. *Elementary Science by Grades.* Book One, pp. 128, $0.72; Book Two, pp. 244. $0.72; Book Three, pp. 264. $0.80. New York: D. Appleton and Co., 1930.

3.—PICTURE BOOKS:

NEWELL, D. M. *American Animals.* Joliet, Illinois: P. F. Volland and Co., 1929. Pp. 80. $1.00. Stories in rhyme with good illustrations.

BRYANT, LORINDA M. *The Children's Book of Animal Pictures.* New York: The Century Co., 1931. Pp. 101. $2.50. The fifty full page pictures are reproductions of Old Masters. On the page opposite each picture, Mrs. Bryant tells briefly, the story of the artist and the particular work of art, and something also of the animal in whose honor the picture was made.

KING, JULIUS. *Birds in Rhyme.* Il. by B. W. King. New York: Thomas Nelson and Sons, 1926. $0.75. The bird pictures in this book are excellent. Julius King has several other picture books in this series. All of them are valuable for library tables in primary rooms: *Dogs; More Birds in Rhyme; A. B. C. of Birds; A. B. C. of Animals;* and *Animal Frolics.*

LORD, ISABLE E. *The Picture Book of Animals.* New York: The Macmillan Company, 1931. $2.50. This beautiful book contains a hundred and fifty photographs of birds, beasts, fish, and other creatures, taken in many parts of the world. It is probably the most valuable picture book we have for the work in nature study. More books of just this type are needed.

4.—THE STORY OF THE WORLD:

FONTANY, ELLENA AND OTHERS. *The Story of the World.* World of Insects, Powers; How the World Grew Up, Kiner; World of Invisible Life, Stephenson; The World of Animals, Stephenson; The Garden of the World, McGill; How the World is Changing, Heal; The World's Moods, Heile; The Physical World, Pollack; What Makes Up the World, Hayes; Other Worlds Than This, Fontany. Chicago, Illinois: Thomas S. Rockwell Co., 1930 and 1931. $12.50 or $1.25 a volume. This series is valuable for the teachers and the children.

5.—BOOKS ABOUT ANIMALS:

ALDREDGE, EDNA M. AND MCKEE, JESSIE F. *Wags and Woofie.* Il. by Robert L. Dickey. Boston: Ginn and Co., 1928. Pp. 111. $0.65. The story of two dogs who have many interesting experiences. Can be read by second grade children. Younger children like to hear it.

BAYNES, ERNEST H. *Polaris: The Story of an Eskimo Dog.* Macmillan, 1922. Pp. 137. $1.50. This story of a real dog can be read by third grade children. It is good material for the library table in that grade. Parts of the story can be told or read to children below the third grade. Baynes also has several other stories of individual animals which have been published by Macmillan: *Jimmie: The Story of a Black*

Bear Cub; The Sprite: The Story of a Red Fox; Three Young Crows; and *War Whoop and Tomahawk: the Story of Two Buffalo Calves.*

BIANCO, MARGERY. *All About Pets.* Il. by Grace Gilkison. New York: The Macmillan Co. $2.00. This book tells about pets and how to care for them. It is a good reference book for use in any primary room.

BIGHAM, MADGE A. *Sonny Elephant.* Boston: Little, Brown and Co., 1930. Pp. 192. $2.50. This story is attractively illustrated by Berta and Elmer Hader.

BRONSON, WILFRID S. *Paddlewings, The Penguin of Galapagos.*. Il. by the Author. New York: The Macmillan Co., 1931. $2.00. True stories of the penguins. Bronson has also written *Fingerfins: The Tale of a Sargasso Fish.* This book is also published by Macmillan. Children in the third grade and some younger children will be delighted with these stories.

BROWN, ETHEL C. *The Green Gate to the Sea.* Newark, N. J.: Silver Burdett and Co., 1924. Pp. 176. $0.76. Stories of animals found on the sea shore, simply written.

BULLARD, MARION. *Robbers in the Garden.* New York: E. P. Dutton and Co., 1930. Pp. 100. $2.00. Interesting in connection with the gardening experience. Superior second grade children can read it.

BUTLER, EVA. *Along the Shore.* New York: The John Day Co., 1930. Pp. 103. $1.25. A handbook for the beginner in nature study. To be used on the beach, in the sea shallows, etc. Can be read by third grade children.

DAGLISH, ERICK F. *Animals in Black and White.* The larger Beasts, The Smaller Beasts, The Reptile Book, the Larger Birds, The Smaller Birds, Fishes and Sea Animals. New York: William Morrow and Co., 1928. $7.50 or $1.25 a volume. A first rate set of reference books for third grade children.

HADER, BERTA AND ELMER. *Under the Pig-Nut Tree.* Summer. Il. by the Authors. New York: Alfred Knopf, 1931. Pp. 64. $1.25. This is the second of a series of nature books of which the first, Spring, has already been published. This book contains insect stories simply written.

JOHNS, LINA M. AND AVERILL, MAY. *Moths and Butterflies.* Il. by Mabel B. Hill. Dansville New York: F. A. Owen Publishing Co., 1929. Pp. 128. $0.72. Factual material which is simply written and scientifically accurate. Valuable for the reading table in any primary room.

KAIGH-EUSTACE, EDYTH. *Jungle Babies.* Il. by Paul Branson and Don Nelson. Chicago: Rand McNally, 1930. Pp. 255. $3.00. Interesting stories and pictures of life in the jungle.

LEWIS, MARY R. *At the Zoo.* New York: Thomas Nelson and Sons, 1927. Pp. 96. $0.50. Stories by children and their teachers, of trips to the Zoo.

MUIR, JOHN. *Stickeen.* Chicago: Houghton Mifflin, 1909. Pp. 74. $1.25. A beautiful story of a dog which can be read to third grade children.

ORTON, HELEN F. *Prancing Pat.* New York: Frederick Stokes, 1929. Pp. 119. $1.25. The story of a horse which can be read to first grade children. Orton has also written *Queenie,* and *The Little Lost Pigs.* First grade children ask to hear these stories over and over again.

PATCH, EDITH M. *Hexapod Stories.* Boston: Little, Brown and Co., 1923. Pp. 179. $1.50. Stories of common insects.

PATCH, EDITH M. *Holiday Hill.* New York: The Macmillan Co., 1931. Pp. 135, $2.00. Patch has also written *Holiday Meadow* and *Holiday Pond.* These stories can be read by second and third grade children.

VAN DOREN, MARK. *Dick and Tom.* New York: The Macmillan Co., 1931. Pp. 68. $2.00. The story of two ponies told by a father to his five year old boy. To be read to children of this age or by second or third grade children.

6.—BOOKS ABOUT PLANTS:

DUNCAN, FRANCES. *When Mother Lets Us Garden.* New York: Moffatt-Yard and Co., 1909. $1.00. A guide for children's gardening which can be read by superior second, and third grade children.

FULTZ, FRANCES M., *The Fly-a-ways and Other Seed Travelers.* Bloomington, Illinois: Public School Publishing Co., 1928. Pp. 186. $0.75. Stories of Seed distribution which can be read by second and third grade children.

JAY, GLADYS. *The Twins in Fruitland.* Chicago: Beckley Cardy Co., 1929. Pp. 160.

$0.70. Stories which can be read by second and third grade children.

OWEN, FRANCES C. *Nuts and Citrus Fruits.* Dansville, New York: The F. A. Owen Publishing Company, 1929. Pp. 128. $0.72. Stories about nuts and citrus fruits which can be read by third grade children.

STOKES, SUSAN. *Ten Common Trees.* Chicago: American Book Company. $0.52. Factual Material which can be used by third grade children.

7.—BOOKS ON PHYSICAL NATURE STUDY:

MITTON, G. E. *The Book of Stars for Young People.* New York: The Macmillan Co., 1925. $2.50. The story of the heavens written in simple language so that it may be read with ease by and to children.

WARNER, GERTRUDE C. *Star Stories for Little Folks.* Chicago: The Pilgrim Press, 1918. Pp. 63. $0.75. Stories of the common constellations for the young children. Easily read by third grade children.

A FEW ADDED NEW BOOKS

———*The Stars at a Glance.* Boston: J. L. Hammett Co. Pp. 48. $.75. A field book for teachers.

JONES, WILFRED. *How the Derrick Works.* New York: The Macmillan Co., 1930. Pp. 45. $2.00. The illustrations by the author make this book valuable for use with first or second grade children.

WAUGH, DOROTHY. *Among the Leaves and Grasses.* New York: Henry Holt and Co., 1931. Pp. 95. $2.50. Interesting insect stories for second or third grade children.

WILLIAMSON, HAMILTON. *Lion Cub.* New York: Doubleday, Doran and Co., 1931. Pp. 40. $.75. A story of wild animal life which first grade children like to hear.

Original Nature Verses

Written by Children in the University of Chicago Elementary School

THE TALKATIVE FLOWERS

A red rose once said
To a daisy white,
"I am going to climb
The wall tonight
To see what is on the other side.
And the daisy replied,
"I'd like to, but to try
Would not be right
For Mother Nature
Told me I could not
When she planted me
In this spot."

Jane, Age 7

SPRING

Spring! Spring!
Why, here is Spring.
Oh, don't you hear
The birdies sing?

Janet, Age 6.

FARM ANIMALS

The farmer has a horse.
The farmer has a cow.
The farmer has a little dog
Who says, "Bow-wow."

The farmer has a pig.
The farmer has some sheep.
The farmer has some little chicks
Who say, "Peep-peep."

First Grade Children.

TWO CLOUDS

Two little clouds at play
Bumped their heads and ran away.
That made it a rainy day.
And that was the end of the clouds
at play.

Evelyn, Age 6½

AMONG THE MAGAZINES

Editor, ELLA RUTH BOYCE

Science Education, a quarterly, in its October, 1931, issue presents two articles on science education in foreign schools. Gerald S. Craig, of Teachers' College, Columbia University, writes on Science in Russian Elementary Schools. This article is based on a study by the author which, he says, "included observation of the instruction of science in the schools, examination of courses of study in science, and interviews with a number of educators." He found that "science is recognized as a most important part of the curriculum of the new schools in Russia. It forms a part of the program from the first year of school (age 7) until the student has qualified as a worker or technician." In one type of school, especially, he found science emphasized, namely, in the "combine school." This is a school closely linked up with an industry, sometimes built right next to it and designed to fit the children for that particular industry. He instances one, at an electrical factory of Kharkov, and he says, "The child is not making toys for his own pleasure; instead, he is rendering service to the state. 'We take part in the electrification of the states' is the slogan of the children in these electrical combine schools." The same plan will be found in other industries and "the Soviet educators constantly stress the fact that the child is taught the importance of social usefulness." Girls are receiving the same training as boys, and the industry and the school are integrated. Another feature of the science program in Russia and one which will seem to Americans more valuable is that of "acquainting the urban children with the country, and the country children with the city." A city school and a village school or one on a cooperative farm will be linked together in organization and an interchange of pupils arranged. The Russian schools have a fifth day of rest, and some experimental work is being tried out for it, with arrangements for opportunity for free work in simple science experiments. Another distinctive feature which is "an approved method of instruction in all subjects including science," is known as "brigade work." Under this plan children are assigned in groups of four to problems, and working together, are supposed to gain in mastery and in a sense of social usefulness. The author makes no comments.

The Platoon School, in its December issue, prints an article entitled Development of a School Park, in which E. A. Spaulding, Principal of the Emerson School, Gary, Ind., describes the successful carrying-out of such a project. In introduction he says, "Nature's great outdoor educational laboratory is sadly neglected by modern schools." He tells how the idea of this particular project arose from the desire of a group of teachers to "build a child-world brightened by nature's setting of grass, trees, flowers, birds, animals, and other desirable natural educational stimuli." It was initiated by asking the children to bring their pets to school. Pens for them were built in wood work classes and quite a menagerie was thus assembled. This led to the need for some better place in which to keep these animals than the school afforded. So space was provided by the Board of Education and nine animals were installed. This was sixteen years ago and today the nine pens have become one hundred, and a list of the animals and birds numbers thirty-two varieties. At first the caretaker was responsible for them, but it soon became evident he could not be expected to do it, so a teacher was found who was assigned this special duty. An extremely interesting feature of this experiment is described as follows: "Every member of the school community was given a vested interest in the school park by each department's being put on a self-supporting basis. Although the Board of Education paid the salaries of the teachers and furnished the permanent equipment, seeds, plants and other items for the school garden had to be purchased from money earned by the sale of garden products.

In the same way feeds and new things for the bird and animal collection could only be purchased from money earned from the sale of eggs and stock. Last year the profits above the cost of all feeds and new stock were nearly four hundred dollars." Eggs are the most certain income, but boarders bring in some income, and some animals are sold as pets. The self-supporting aspect has made the affair one of great interest to the community. Another very gratifying result is the attitude of responsibility developed among the children, along with high standards of respect for property, and nurturing care of animals. Its educational possibilities will be apparent, but the writer makes this significant comment: "The outdoor nature study work has provided so much purposeful activity for so many children that there seems no end to its possibilities. Class-room teachers soon learn that for any lesson motivated and vitalized by the children's interest in the school park, the 'readiness' of the children's minds so necessary for successful teaching is there." He comments, however, that it has not been easy to find satisfactory teachers for this outdoor work. No institution is training teachers for it and so they have had to depend on ones with sufficient background of training and experience and natural love of out-door things. He warns that not less than ten acres must be devoted to such a park and that twenty are preferable. He recognizes the costliness of such a plant but he says, "Few educational investments will yield greater returns to a community."

The Elementary School Journal, for December, prints an article by Elmo N. Stevenson of Eastern Oregon Normal School, La Grande, Oregon, on Children's Nature Interests. This is a report of an investigation made by the writer to determine whether children are interested in nature primarily. He first briefly summarizes a number of studies which have been made in attempts to discover "first, where the greatest interest of children lies; second, assuming that nature proves to possess the greatest interest for children, to determine which phase is most popular." Seven different investigators are quoted as to their results, and his own experiment is then described in detail. Quoting—"From the results the following principles might be drawn:

1. That children are interested in nature objects;
2. That live animals are most interesting;
3. That the unusual, unique, and spectacular things grip the interest of the children;
4. That children's interests vary from time to time.

Such a set of principles could easily be a guide in the selection of subjects for nature-study in the intermediate grades."

Educational Method, for December, prints an article by Mabel L. Everett of the Onaway High School, Cleveland, Ohio, called Shall We Teach Fables or Truth? which may well make one stop and think, when he is planning a science course of study. The particular item of information which she discusses has to do with the life of the Eskimos, and she shows how many errors in fact are to be found in current courses of study. She gives the following somewhat startling facts—"A review of twenty-eight textbooks, written in the years 1920-29, revealed the fact that only eight of the twenty-eight stated the actual truth concerning the climate of the North." Furthermore, "A survey of sixty-five courses of study, written in the years 1921-1929, led one to the conclusion that only seven out of the entire sixty-five presented authentic facts concerning the homes and climate of the northern region." And perhaps even more appalling is the following: "A review of twenty-one articles found in teachers' magazines (1914-1930) showed that the suggestions concerning the teaching of Eskimo life consisted almost entirely of suggestions for sand table constructions of salt, flour, and cotton igloos. One rather naive idea, however, concerned men's discarded derbies. They were highly recommended for igloo construction and were guaranteed to last for several years, if well painted." The article ends with some authentic information and with references for securing more such information. The suggestion, while limited here to one topic, should be stimulating in all subjects.

While hardly recent enough for detailed review at this time, the contribution to science education made by *Progressive Education* in its October issue should be mentioned. This is a special number devoted to The Child and Science, and it offers abundant material of all sorts. Inspirational articles, practical suggestions, and educational values are treated from many different angles. Seventeen ar-

ticles with such themes as Adventures in Beauty, Science as Experience and Attitude, Preparing the Child for Science, and Science in the Unified Curriculum, offer rich material to all interested in this especial angle of education. A particularly valuable feature of the entire magazine is the richness in number and variety of its illustrations. All of them photographic, they show children experiencing in many different ways the opportunities for nature contacts.

School and Home, the quarterly journal published by the Parent and Teachers' Association of the Ethical Culture Schools, devotes its November issue to Social Studies. With the exception of the opening article, Introduction to the Social Studies by V. T. Thayer, the entire number is devoted to descriptions of various pieces of practical work. These are listed as At Home in a Third Grade, Our Desert Indians, A Study of Vegetables, The Seven-Year-Old Meets Prehistoric Man, The First Grade Visits Kimono Land, Creative Art and the Very Young, Music With Other Subjects. The grades represented are first, second, and third, and there are photographic illustrations, so that a teacher in search of practical suggestions will find help here. The introductory article presents the aim of this issue of the journal, thus, "to describe some of the investigations carried on by children in the primary grades." The hope is that "the reader will preceive how children who set out jointly to learn some phases of their environment acquire in the process an insight into human relations, actual practice in social adjustment, as well as a growing command over those tools of learning which are for the conventional school too often lonely and isolated objectives." In other words, we have here a concrete illustration of the methods of the progressive school, and a picture of the results. For, he tells us, "The modern school utilizes the arts and crafts, song, dance, and dramatic play as facets of thought and expression. It proceeds on the assumption that the more varied are the highways of communication between the individual and his world, the more likely is he to develop a rich and understanding personality. In the complex life of today it is of lasting importance that we assist the child to multiply his points of sympathetic and appreciative contact with the experiences of others."

Flowers

The daffodils are nodding
Their pretty yellow heads.
The crocuses are blooming
In the crocus beds.

The roses come in summer,
Forsythia in the spring.
And in the late fall mornings
I hear the blue bells ring.

I love the flowers in summer.
I love them in the fall.
But the flowers that come in
springtime
I love the best of all.

Louise, Age 6½
The University of Chicago Elementary School

RESEARCH ABSTRACTS

Editor, ELIZABETH MOORE MANWELL

How Can Science Information Be Presented to Young Children? One of the difficulties which confront many teachers of young children, especially in city schools, is the problem of how to present the material. Blackboard and easel are satisfactory for showing reading and arithmetic material, and for penmanship copies, but few are the teachers who feel capable of presenting on the black-board copies they might draw of an alligator and his habitat, or a herd of buffalo charging. Since most teachers are unable to draw well, and since, if they live in the city, they are unable to supply enough living plants or animals to interest the whole class, the subject of science is often out-crowded in the younger grades.

A study[1] has been made of the value of lantern pictures in teaching young children, and it offers suggestions which are quite applicable to the teaching of natural science, although it happens to be made in the field of geography.

The purpose of this investigation was to find out whether pictures are an effective aid in the teaching of geography. The number of child-studied was 420, comprising grades Four, Five, Six and Seven, in three city schools.

The materials used consisted of a film of twenty or thirty views of each of ten countries: Africa, Alaska, Australia, China, Holland, Ireland, Italy, South America, and Switzerland. The pictures depicted the geographical features, the life, industries, occupations and other things of significance in each country. In choosing the countries, there was no attempt to correlate the study with the geography work of the grades, although as it happened in each grade except grade Five the regular work of the school year did touch upon some of the countries used in the test.

The films were about an inch in width and were adjusted in a small, portable hand-operated machine wherein each picture could be kept visible as long as desired. Explaining each film was a leaflet which contained general information about the country and specific information about each picture. The film and leaflet relating to each country were analysed and, using them as a basis, a true-false test, containing twenty statements, was made out for each country.

The same general method was used in all three schools; on Monday the true-false test was used without any instruction or preparation for the purpose of having a check on the child's general information. On Tuesday, immediately following the lesson, the same test was repeated to measure the gain. One week later a third trial was given in order to measure the amount of retention and to indicate the final gain in the scores over Trial 1.

In School A no pictures were used. The first test was given on the country to be studied that week on a given Monday morning. The next day the teacher of each class conducted a discussion group based on the informational material which fitted the film, the lesson lasting from 20 to 30 minutes. During this time reference was made to maps or books as the need arose. At the end of this lesson the same test given the previous day was given again, and as on the day before was checked by the children. The next step of the experiment came a week later, when Trial 3 of the test was given without comment. The same procedure was followed throughout the experiment which covered a period of eleven weeks. Each week a new country was considered.

In School B the only difference from the procedure in School A was that on Tuesday after the teacher gave the lesson (using the procedure of School A) the film was immediately shown thus adding the visual image to the verbal image. During the showing of the pictures any questions which arose were answered, but discussion was not encouraged. After the showing of the pictures the true-false test was repeated for the second time

[1]Meador, Mildred. Are Pictures an Effective Aid in the Teaching of Geography? *Educational Method*, Vol. XI (Nov.), 1931 p. 97-103.

and as in School A one week later the third trial was given. This method was followed for all the ten countries used in the study.

The procedure in School C was exactly like that in the other two schools with one marked exception. The first trial was given on Monday, and on Tuesday the lesson, but the lesson began with the showing of the film and from this the entire lesson was drawn. Discussion was encouraged, questions were asked, points of striking interest were noted and each picture remained visible until all that it could contribute to the lesson had been drawn out. Trial 2 of the test was given following the lesson and one week later was repeated for the third time.

The data giving the results of the study "indicate that the use of the still picture is a very effective aid in the teaching of foreign geography in the elementary schools," as is shown by the following points:

1. School A, where no pictures were used
   (1) School A gained less than either of the other schools from the lesson
   (2) The retention shown by School A at the end of a week was less than in Schools B and C where the pictures were used.
   (3) The final gain for School A, that is the improvement of the test scores on the third trial over those on the first, was less for School A than for either of the other two schools
2. School B, where the lesson was supplemented by the use of pictures
   (1) School B gained more after the lesson than School A where pictures were not used, but less than School C where the pictures formed the basis of the lesson
   (2) School B's retention was greater than School A's but less than that in School C
   (3) In School B the final gain is greater than that of School A but not as great as in School C
3. School C, where pictures formed the basis for the lesson
   (1) School C showed a greater gain after the lesson
   (2) School C showed a gain in retention at the end of the week while both the other schools showed a loss
   (3) The final gain for School C was greater than in Schools A and B

It will also be of interest to elementary school teachers to see that of the children studied those in the fourth grade made the greatest gain in scores in the two schools where the pictures were used.

Although this study was made with geography material and not with material in the natural sciences, and although the school grades covered were those of the grammar school it would seem to be safe to infer from the results here given that the same results might be expected with natural science material, and with children whose age ranges were still younger.

Natural Science Education in the German Schools.—A valuable contribution to the development of elementary education is given in the monograph[2] on the teaching of natural science in the German schools by Dr. Meier.

Dr. Meier has made a scholarly survey of the program for natural science teaching in the elementary schools and in the teachers' colleges under the new educational regime in Germany, and in her monograph not only describes actual practices and principles as they are found to be operating in Germany, but also points out possible implications for natural science education in similar American institutions.

The first part of the study gives a survey of the organization of the German Elementary schools. The German child of to-day is compelled to attend during his first four years the *Grundschule* or foundation school. The aims of this school are quoted from the Ministerial Decree of 1921, as follows: "The *Grundschule*, ... has the task of giving to the children who attend it a basic training on which not only the *Volkschule* in its last four years can be built but also the middle and secondary schools with their more extended instruction. Therefore it must awaken and train all the physical and spiritual powers of the children and equip them with those knowledges and skills which as the foundation for every further type of instruction are absolutely essential."

[2]Meier, Lois. *Natural Science Education in the German Elementary Schools.* New York: Columbia University Teachers College Contributions to Education, No. 445, 130. Pp. VII-158.

Natural science education in the German elementary schools begin in the *Grundschule* in the subject matter of *Heimatkunde*. The roots of natural science as well as of geography and history are found in the instruction in the *Heimatkunde*. This word has been variously translated as "community studt" and local informational studies, but it includes more than information. It forms the basis for the educative values of the entire primary curricula, and the conception of the *Heimatkunde* is that of an ever-widening circle, at the center is the child and his experiences at home and school. The circle gradually widens to include the community, the city and the surrounding country. The Prussian syllabus of 1921 defines such "community study" as follows: "Observational instruction dealing with local environment takes its materials during the first two school years from the child's world of experience. Home, yard and garden, school house and school yard, street and market, fields, meadow and forest, life at home and at school, work at home, in the shop, in the factory, on the farm, all . . . . . form the subject matter of this work."

The actual courses of study for the children in the first four years varies in the different German states, but the general plan is that these community studies, including the natural as well as the civic life in the child's environment form an integrated curriculum. Great stress is laid on excursions, which are well organized, and are repeated at least once each season in order to let the children see and observe carefully the changes in nature, and which form a systematic part of the school work. These instructional walks become longer in length as the children get older, and the history of the community as well as its geography and natural science are included; while a very careful study is made in the third and fourth grades demanding careful observation of definite places. Problem instruction begins to enter into the work of the fourth grade, as for example in the questions in one of the syllabi, "Why must meadows and fields be fertilized?" "Why do people take fresh-air cures?"

Obviously, to conduct such work with children, it is necessary for the teachers themselves to be well grounded in both required and elective natural science course-work.

While the author is conservative in her praise of the values of natural science work in Germany, she finds much to recommend it. It forms an integral part of the primary and grammar school curricula; it is correlated with other school subjects, becoming in some respects the warp and woof of the day's program; it is based on experience, on actual contacts with natural history in the out-of-doors, such as the instructional walk, long excursions, and the use of the school garden, while in note-books the children keep personal reports from day to day. The German schools, no matter how limited their budget, are well-equipped with science apparatus and make free use of the out-of-doors as a laboratory. The teachers in these German schools have had not only scientific training but have had experience in attending seminaries and in practical work in teaching science as part of their training.

Some Publications Received by The Editorial Office

A Comparative Study of a Nursery School Versus a Non-Nursery School Group. Ethel Kawin, Carolyn Hoefer and others. Chicago, Illinois, The University of Chicago Press. 1931. 51 p. $.75.

Reports a comparative study of nursery school children and a control group who did not attend nursery school, carried on cooperatively by the Elizabeth McCormick Memorial Fund and the Preschool Department of the Illinois Institute for Juvenile Research, with the assistance of the Behavior Research Fund in the Franklin and Winnetka public school nurseries.

HUNGERFORD, FRANCES ANN.

Preschool Equipment. Iowa City, Iowa, University of Iowa Extension Bulletin, No. 263. 1931. 78 p. $.50.

Includes directions for construction, diagrams, photographs of use, and educational values of numerous pieces of preschool equipment in use at the Iowa Child Welfare Research Station.

ROGERS, MARIA LAMBDIN.

A Contribution to the Theory and Practice of Parents' Associations. New York City, United Parents' Associations of New York City, Inc. 1931. 83 p. $.50.

Discusses the findings of a five year experiment made by the United Parents' Associations of New York City. Records the theory and practice of an extensive program in parent education.

COMMITTEE, PRIMARY COUNCIL EXCURSION COMMITTEE.

Places to Go, Things to See. Spokane, Washington, Spokane Elementary Schools. 1931. 46 p. $.15.

Includes local and general source material and suggestive preparatory procedures for the taking of educative excursions with children.

BOGUE, MARY F., *Editor.*

Day Nursery Manual. Standards Committee of the National Federation of Day Nurseries, Inc. New York City, National Federation of Day Nurseries, Inc., 122 East 22nd Street. 1931. 136 p. $.50.

Compiled by technicians in the fields of education, social case work, nutrition, physical and mental health and child care, this manual presents conclusions and recommendations, largely tentative, of value to all workers with preschool children. The status of the nursery is defined historically, in relation to modern living and modern child caring agencies, and in relation to anticipated future programs.

MCHALE, KATHRYN, AND MANWELL, ELIZABETH MOORE.

The Toddler. Washington, D. C., American Association of University Women, 1634 Eye Street, N. W. 1931. 110 p. $.60.

"Presents child development considerations for the second year of life including the new skills emphasizing walking, language and the learning of meanings, self control, self direction, learning his place in the social order, and the early attitudes that become the later characteristics."

HART, HELEN.

Day Nurseries in a Changing World—A Report of the Research Program of the National Federation of Day Nurseries. New York City, National Federation of Day Nurseries, 122 East 22nd Street. 1931. 56 p.

Reports the research program, findings, and recommendations of the association in terms of the present need for day nurseries.

Behavior Problems of School Children. New York City, The National Committee for Mental Hygiene, Inc., 450 Seventh Avenue. 1931. 22 p. $.15.

Offers challenging suggestions for the classroom treatment of behavior situations with the nervous, truant, naughty, and retarded child.

ELIOT, MARTHA M.; HANNA, AGNES K., AND STRIEBELING, HAZEL K.

Emergency Food Relief and Child Health. Children's Bureau, U. S. Department of Labor and Bureau of Home Economics, U. S. Department of Agriculture. Washington, D. C., Government Printing Office. 1931. 10 p.

States in concise form the essential food needs of the growing child. Specific marketing suggestions for the reduced budget are listed.

Publications of The Iowa Child Welfare Research Station, Bulletin of the State University of Iowa, New Series, No. 618. Iowa City, Iowa, State University of Iowa. 1932. 16 p.

Lists publications and annotates recent and available researches from the Iowa Child Welfare Research Station.

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6. "The Jungle"—An analysis of a unit of work. Based on "Little Black Sambo." by Mrs. Lois Hughes—and student teachers. State Teachers College, Milwaukee, Wis..... 25c
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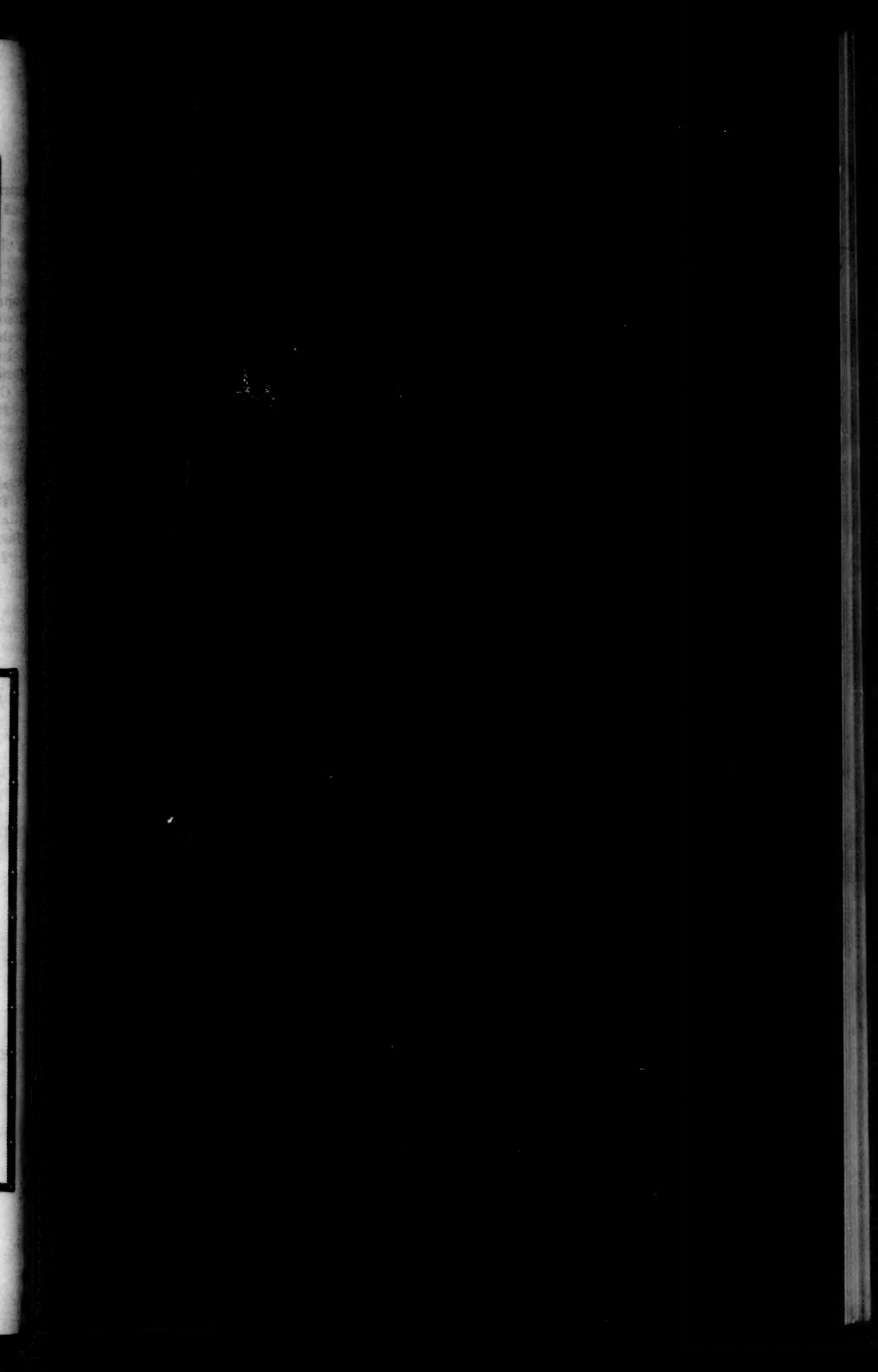
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